



Appendix A

Modulation Characteristic Measurement According to FCC part 2.1047 and part 27 subpart C & L



BW: 1.4M TM2.0: 64QAM

No.5090 (M) 737MHz	EUTRA/LTE						
	Freq: 737 MHz	Meas Setup: 1 TX x 1 RX		Ext. Att: 0 dB			
	Mode: DL FDD, 6 RB (1.4 MHz), Normal (CP)	Sync State: OK		Capture Time: 20.1 ms			
CONTINUOUS TRG: FREE RUN EXT REF RF							
Result Summary							
Frame Results	Min	Mean	Limit	Max	Limit	Unit	
EVM PDSCH QPSK			17.50			%	
EVM PDSCH 16QAM			12.50			%	
EVM PDSCH 64QAM		1.21	8.00			%	
Results for Selection	Subframe(s)	ALL	Selection	Antenna 1	Symbols meas.	140	
EVM All	1.00	2.30		3.75		%	
EVM Phys. Channel	1.04	2.38		4.44		%	
EVM Phys. Signal	0.77	2.04		3.55		%	
Frequency Error	- 1.52	0.60		1.53		Hz	
Sampling Error	- 3.24	- 1.20		0.17		ppm	
IQ Offset	- 49.43	- 48.56		- 47.86		dB	
IQ Gain Imbalance						dB	
IQ Quadrature Error						°	
OSTP	5.02	6.18		6.92		dBm	
Power	7.85	8.64		11.40		dBm	
Crest Factor		11.41				dB	

Running ...

Date: 22.APR.2010 11:38:22

TM3.1: 64QAM

No.5090 (M) 737MHz	EUTRA/LTE						
	Freq: 737 MHz	Meas Setup: 1 TX x 1 RX		Ext. Att: 0 dB			
	Mode: DL FDD, 6 RB (1.4 MHz), Normal (CP)	Sync State: OK		Capture Time: 20.1 ms			
CONTINUOUS TRG: FREE RUN EXT REF RF							
Result Summary							
Frame Results	Min	Mean	Limit	Max	Limit	Unit	
EVM PDSCH QPSK			17.50			%	
EVM PDSCH 16QAM			12.50			%	
EVM PDSCH 64QAM		4.29	8.00			%	
Results for Selection	Subframe(s)	ALL	Selection	Antenna 1	Symbols meas.	140	
EVM All	9.27	12.07		13.70		%	
EVM Phys. Channel	10.18	13.54		15.99		%	
EVM Phys. Signal	2.23	3.97		7.67		%	
Frequency Error	- 8.06	0.23		5.50		Hz	
Sampling Error	- 10.91	1.53		36.56		ppm	
IQ Offset	- 52.35	- 50.43		- 47.80		dB	
IQ Gain Imbalance						dB	
IQ Quadrature Error						°	
OSTP	12.66	13.57		14.10		dBm	
Power	13.38	13.68		13.78		dBm	
Crest Factor		6.73				dB	

Running ...

Date: 22.APR.2010 11:39:04

TM3.2: 16QAM



No.5090 (M)
737MHz

EUTRA/LTE						
Freq:	737 MHz	Meas Setup:	1 TX x 1 RX	Ext. Att:	35 dB	
Mode:	DL FDD, 6 RB (1.4 MHz), Normal (CP)	Sync State:	OK	Capture Time:	20.1 ms	
CONTINUOUS	TRG: FREE RUN	EXT REF	RF			
Result Summary						
Frame Results	Min	Mean	Limit	Max	Limit	Unit
EVM PDSCH QPSK		9.58	17.50			%
EVM PDSCH 16QAM		6.35	12.50			%
EVM PDSCH 64QAM			8.00			%
Results for Selection	Subframe(s)	ALL	Selection	Antenna 1	Symbols meas.	140
EVM All		5.98	9.88		17.95	%
EVM Phys. Channel		6.03	10.21		19.71	%
EVM Phys. Signal		2.92	4.04		5.34	%
Frequency Error		- 4.53	0.73		4.13	Hz
Sampling Error		- 16.23	- 0.80		11.82	ppm
IQ Offset		- 54.03	- 53.11		- 51.61	dB
IQ Gain Imbalance		- 0.11	- 0.01		0.05	dB
IQ Quadrature Error		- 0.32	0.12		0.72	°
OSTP		13.34	13.51		13.71	dBm
Power		13.50	13.59		13.71	dBm
Crest Factor			6.33			dB

Running ...

Date: 22.APR.2010 12:59:58

TM3.3: QPSK

No.5090 (M)
737MHz

EUTRA/LTE						
Freq:	737 MHz	Meas Setup:	1 TX x 1 RX	Ext. Att:	0 dB	
Mode:	DL FDD, 6 RB (1.4 MHz), Normal (CP)	Sync State:	OK	Capture Time:	20.1 ms	
CONTINUOUS	TRG: FREE RUN	EXT REF	RF			
Result Summary						
Frame Results	Min	Mean	Limit	Max	Limit	Unit
EVM PDSCH QPSK		11.48	17.50			%
EVM PDSCH 16QAM		7.00	12.50			%
EVM PDSCH 64QAM			8.00			%
Results for Selection	Subframe(s)	ALL	Selection	Antenna 1	Symbols meas.	140
EVM All		6.37	14.20		28.75	%
EVM Phys. Channel		6.46	14.71		31.69	%
EVM Phys. Signal		3.51	4.50		6.15	%
Frequency Error		- 4.48	- 0.11		3.34	Hz
Sampling Error		- 9.45	- 2.30		7.35	ppm
IQ Offset		- 55.31	- 53.10		- 52.16	dB
IQ Gain Imbalance		- 0.11	0.01		0.12	dB
IQ Quadrature Error		- 0.79	0.02		0.64	°
OSTP		13.45	13.91		14.34	dBm
Power		13.68	13.83		13.95	dBm
Crest Factor			6.31			dB

Running ...

Date: 22.APR.2010 11:40:54



BW: 3M

TM2.0: 64QAM

No.5090 (M) 737MHz	EUTRA/LTE							
	Freq: 737 MHz		Meas Setup: 1 TX x 1 RX		Ext. Att: 0 dB			
	Mode: DL FDD, 15 RB (3 MHz), Normal (CP)		Sync State: OK		Capture Time: 20.1 ms			
	CONTINUOUS TRG : FREE RUN EXT REF RF							
	Result Summary							
	Frame Results		Min	Mean	Limit	Max	Limit	Unit
	EVM PDSCH QPSK				17.50			%
	EVM PDSCH 16QAM				12.50			%
	EVM PDSCH 64QAM			0.76	8.00			%
	Results for Selection		Subframe(s)	ALL	Selection	Antenna 1	Symbols meas.	140
EVM All		0.54	0.76		1.15		%	
EVM Phys. Channel		0.58	0.86		1.32		%	
EVM Phys. Signal		0.46	0.56		0.76		%	
Frequency Error		- 0.66	0.61		1.53		Hz	
Sampling Error		- 0.32	0.05		0.32		ppm	
IQ Offset		- 50.61	- 47.65		- 47.02		dB	
IQ Gain Imbalance							dB	
IQ Quadrature Error							°	
OSTP		0.79	2.05		3.04		dBm	
Power		5.02	5.76		8.37		dBm	
Crest Factor			13.84				dB	

Running ...

Date: 22.APR.2010 11:45:27

TM3.1: 64QAM

No.5090 (M) 737MHz	EUTRA/LTE							
	Freq: 737 MHz		Meas Setup: 1 TX x 1 RX		Ext. Att: 0 dB			
	Mode: DL FDD, 15 RB (3 MHz), Normal (CP)		Sync State: OK		Capture Time: 20.1 ms			
	CONTINUOUS TRG : FREE RUN EXT REF RF							
	Result Summary							
	Frame Results		Min	Mean	Limit	Max	Limit	Unit
	EVM PDSCH QPSK				17.50			%
	EVM PDSCH 16QAM				12.50			%
	EVM PDSCH 64QAM			4.28	8.00			%
	Results for Selection		Subframe(s)	ALL	Selection	Antenna 1	Symbols meas.	140
EVM All		5.71	8.55		10.96		%	
EVM Phys. Channel		5.92	9.71		13.35		%	
EVM Phys. Signal		3.18	3.75		4.75		%	
Frequency Error		- 3.30	- 0.19		2.40		Hz	
Sampling Error		- 1.46	0.33		1.73		ppm	
IQ Offset		- 54.63	- 52.66		- 51.25		dB	
IQ Gain Imbalance							dB	
IQ Quadrature Error							°	
OSTP		13.19	13.48		13.71		dBm	
Power		13.44	13.60		13.69		dBm	
Crest Factor			6.92				dB	

Running ...

Date: 22.APR.2010 11:45:53

TM3.2: 16QAM



No.5090 (M)
737MHz

EUTRA/LTE						
Freq:	737 MHz	Meas Setup:	1 TX x 1 RX	Ext. Att:	35 dB	
Mode:	DL FDD, 15 RB (3 MHz), Normal (CP)	Sync State:	OK	Capture Time:	20.1 ms	
CONTINUOUS	TRG : FREE RUN	EXT REF	RF			
Result Summary						
Frame Results	Min	Mean	Limit	Max	Limit	Unit
EVM PDSCH QPSK		8.90	17.50			%
EVM PDSCH 16QAM		7.06	12.50			%
EVM PDSCH 64QAM			8.00			%
Results for Selection	Subframe(s)	ALL	Selection	Antenna 1	Symbols meas.	140
EVM All		6.46	8.18		9.81	%
EVM Phys. Channel		6.56	8.36		10.29	%
EVM Phys. Signal		3.20	4.45		5.82	%
Frequency Error		- 2.70	0.17		3.66	Hz
Sampling Error		- 1.99	0.79		2.63	ppm
IQ Offset		- 55.77	- 54.21		- 52.24	dB
IQ Gain Imbalance		- 0.05	0.02		0.13	dB
IQ Quadrature Error		- 0.34	0.00		0.69	°
OSTP		13.37	13.77		14.02	dBm
Power		13.64	13.78		13.82	dBm
Crest Factor			6.31			dB

Running ...

Date: 22.APR.2010 13:01:48

TM3.3: QPSK

No.5090 (M)
737MHz

EUTRA/LTE						
Freq:	737 MHz	Meas Setup:	1 TX x 1 RX	Ext. Att:	0 dB	
Mode:	DL FDD, 15 RB (3 MHz), Normal (CP)	Sync State:	OK	Capture Time:	20.1 ms	
CONTINUOUS	TRG : FREE RUN	EXT REF	RF			
Result Summary						
Frame Results	Min	Mean	Limit	Max	Limit	Unit
EVM PDSCH QPSK		11.59	17.50			%
EVM PDSCH 16QAM		6.90	12.50			%
EVM PDSCH 64QAM			8.00			%
Results for Selection	Subframe(s)	ALL	Selection	Antenna 1	Symbols meas.	140
EVM All		7.09	9.18		10.68	%
EVM Phys. Channel		7.32	9.39		10.89	%
EVM Phys. Signal		3.81	4.92		7.22	%
Frequency Error		- 2.08	- 0.26		2.52	Hz
Sampling Error		- 2.85	0.49		3.24	ppm
IQ Offset		- 55.46	- 53.88		- 51.70	dB
IQ Gain Imbalance		- 0.06	- 0.02		0.08	dB
IQ Quadrature Error		- 0.24	0.09		0.64	°
OSTP		13.42	13.69		13.95	dBm
Power		13.51	13.72		13.87	dBm
Crest Factor			6.34			dB

Running ...

Date: 22.APR.2010 11:47:13

BW: 5M
TM2.0: 64QAM



No.5090 (M)
737MHz

EUTRA/LTE						
Freq: 737 MHz		Meas Setup: 1 TX x 1 RX		Ext. Att: 35 dB		
Mode: DL FDD, 25 RB (5 MHz), Normal (CP)		Sync State: OK		Capture Time: 20.1 ms		
CONTINUOUS	TRG: FREE RUN	EXT REF	RF			
Result Summary						
Frame Results	Min	Mean	Limit	Max	Limit	Unit
EVM PDSCH QPSK			17.50			%
EVM PDSCH 16QAM			12.50			%
EVM PDSCH 64QAM		1.05	8.00			%
Results for Selection	Subframe(s)	ALL	Selection	Antenna 1	Symbols meas.	140
EVM All		0.81	0.99		1.18	%
EVM Phys. Channel		0.90	1.10		1.33	%
EVM Phys. Signal		0.67	0.85		1.08	%
Frequency Error		- 1.12	0.08		3.11	Hz
Sampling Error		- 0.15	0.07		0.26	ppm
IQ Offset		- 48.27	- 45.90		- 45.40	dB
IQ Gain Imbalance						dB
IQ Quadrature Error						°
OSTP		- 1.10	0.09		1.03	dBm
Power		4.37	4.91		7.02	dBm
Crest Factor			14.78			dB

Running ...

Date: 22.APR.2010 13:06:06

TM3.1: 64QAM

No.5090 (M)
737MHz

EUTRA/LTE						
Freq: 737 MHz		Meas Setup: 1 TX x 1 RX		Ext. Att: 35 dB		
Mode: DL FDD, 25 RB (5 MHz), Normal (CP)		Sync State: OK		Capture Time: 20.1 ms		
CONTINUOUS	TRG: FREE RUN	EXT REF	RF			
Result Summary						
Frame Results	Min	Mean	Limit	Max	Limit	Unit
EVM PDSCH QPSK			17.50			%
EVM PDSCH 16QAM			12.50			%
EVM PDSCH 64QAM		4.44	8.00			%
Results for Selection	Subframe(s)	ALL	Selection	Antenna 1	Symbols meas.	140
EVM All		3.90	4.43		5.24	%
EVM Phys. Channel		3.87	4.44		5.23	%
EVM Phys. Signal		2.73	4.17		5.40	%
Frequency Error		- 0.72	1.29		3.77	Hz
Sampling Error		- 0.30	0.77		1.48	ppm
IQ Offset		- 54.77	- 53.37		- 51.43	dB
IQ Gain Imbalance		- 0.05	0.00		0.04	dB
IQ Quadrature Error		- 0.28	- 0.09		0.20	°
OSTP		13.60	13.78		13.95	dBm
Power		13.69	13.78		13.81	dBm
Crest Factor			6.82			dB

Running ...

Date: 22.APR.2010 13:07:16

TM3.2: 16QAM



No.5090 (M)
737MHz

EUTRA/LTE						
Freq: 737 MHz		Meas Setup: 1 TX x 1 RX		Ext. Att: 35 dB		
Mode: DL FDD, 25 RB (5 MHz), Normal (CP)		Sync State: OK		Capture Time: 20.1 ms		
CONTINUOUS	TRG: FREE RUN	EXT REF	RF			
Result Summary						
Frame Results	Min	Mean	Limit	Max	Limit	Unit
EVM PDSCH QPSK		10.29	17.50			%
EVM PDSCH 16QAM		6.38	12.50			%
EVM PDSCH 64QAM			8.00			%
Results for Selection	Subframe(s)	ALL	Selection	Antenna 1	Symbols meas.	140
EVM All		6.54	8.03		8.98	%
EVM Phys. Channel		6.64	8.18		9.15	%
EVM Phys. Signal		3.66	4.51		6.26	%
Frequency Error		- 2.31	- 0.48		1.09	Hz
Sampling Error		- 1.15	0.29		1.56	ppm
IQ Offset		- 55.67	- 54.85		- 53.92	dB
IQ Gain Imbalance		- 0.03	0.00		0.04	dB
IQ Quadrature Error		- 0.06	0.05		0.27	°
OSTP		13.54	13.84		14.03	dBm
Power		13.82	13.89		13.95	dBm
Crest Factor			6.34			dB

Running ...

Date: 22.APR.2010 13:07:54

TM3.3: QPSK

No.5090 (M)
737MHz

EUTRA/LTE						
Freq: 737 MHz		Meas Setup: 1 TX x 1 RX		Ext. Att: 35 dB		
Mode: DL FDD, 25 RB (5 MHz), Normal (CP)		Sync State: OK		Capture Time: 20.1 ms		
CONTINUOUS	TRG: FREE RUN	EXT REF	RF			
Result Summary						
Frame Results	Min	Mean	Limit	Max	Limit	Unit
EVM PDSCH QPSK		11.06	17.50			%
EVM PDSCH 16QAM		6.31	12.50			%
EVM PDSCH 64QAM			8.00			%
Results for Selection	Subframe(s)	ALL	Selection	Antenna 1	Symbols meas.	140
EVM All		7.55	8.88		9.82	%
EVM Phys. Channel		7.69	9.07		10.02	%
EVM Phys. Signal		3.33	4.34		5.71	%
Frequency Error		- 2.79	- 0.04		2.70	Hz
Sampling Error		- 0.92	0.32		1.86	ppm
IQ Offset		- 55.29	- 54.90		- 54.53	dB
IQ Gain Imbalance		- 0.06	- 0.01		0.03	dB
IQ Quadrature Error		- 0.28	- 0.01		0.54	°
OSTP		13.53	13.91		14.22	dBm
Power		13.81	13.95		14.07	dBm
Crest Factor			6.29			dB

Running ...

Date: 22.APR.2010 13:08:21

BW: 10M
TM2.0: 64QAM



No.5090 (M)
737MHz

EUTRA/LTE						
Freq:	737 MHz	Meas Setup:	1 TX x 1 RX	Ext. Att:	35 dB	
Mode:	DL FDD, 50 RB (10 MHz), Normal (CP)	Sync State:	OK	Capture Time:	20.1 ms	
CONTINUOUS	TRG: FREE RUN	EXT REF	RF			
Result Summary						
Frame Results	Min	Mean	Limit	Max	Limit	Unit
EVM PDSCH QPSK			17.50			%
EVM PDSCH 16QAM			12.50			%
EVM PDSCH 64QAM		1.04	8.00			%
Results for Selection	Subframe(s)	ALL	Selection	Antenna 1	Symbols meas.	140
EVM All		0.66	0.73		0.78	%
EVM Phys. Channel		0.77	0.91		1.02	%
EVM Phys. Signal		0.55	0.58		0.62	%
Frequency Error		- 0.05	1.06		1.99	Hz
Sampling Error		- 0.01	0.02		0.03	ppm
IQ Offset		- 46.44	- 44.76		- 44.42	dB
IQ Gain Imbalance						dB
IQ Quadrature Error						°
OSTP		- 4.13	- 3.00		- 2.02	dBm
Power		3.02	3.41		5.03	dBm
Crest Factor			15.97			dB

Running ...

Date: 22.APR.2010 11:53:15

TM3.1: 64QAM

No.5090 (M)
737MHz

EUTRA/LTE						
Freq:	737 MHz	Meas Setup:	1 TX x 1 RX	Ext. Att:	35 dB	
Mode:	DL FDD, 50 RB (10 MHz), Normal (CP)	Sync State:	OK	Capture Time:	20.1 ms	
CONTINUOUS	TRG: FREE RUN	EXT REF	RF			
Result Summary						
Frame Results	Min	Mean	Limit	Max	Limit	Unit
EVM PDSCH QPSK			17.50			%
EVM PDSCH 16QAM			12.50			%
EVM PDSCH 64QAM		4.53	8.00			%
Results for Selection	Subframe(s)	ALL	Selection	Antenna 1	Symbols meas.	140
EVM All		3.82	4.54		5.00	%
EVM Phys. Channel		3.82	4.57		5.03	%
EVM Phys. Signal		2.64	3.96		4.75	%
Frequency Error		- 0.46	0.47		2.04	Hz
Sampling Error		- 0.33	0.06		0.75	ppm
IQ Offset		- 55.55	- 54.40		- 53.64	dB
IQ Gain Imbalance		- 0.01	0.01		0.04	dB
IQ Quadrature Error		- 0.16	- 0.00		0.17	°
OSTP		13.71	13.84		14.08	dBm
Power		13.73	13.80		13.83	dBm
Crest Factor			6.84			dB

Running ...

Date: 22.APR.2010 11:53:53

TM3.2: 16QAM



No.5090 (M) 737MHz	EUTRA/LTE						
	Freq: 737 MHz	Meas Setup: 1 TX x 1 RX		Ext. Att: 35 dB			
	Mode: DL FDD, 50 RB (10 MHz), Normal (CP)	Sync State: OK		Capture Time: 20.1 ms			
	CONTINUOUS	TRG: FREE RUN	EXT REF	RF			
	Result Summary						
	Frame Results	Min	Mean	Limit	Max	Limit	Unit
	EVM PDSCH QPSK		9.40	17.50			%
	EVM PDSCH 16QAM		7.35	12.50			%
	EVM PDSCH 64QAM			8.00			%
	Results for Selection	Subframe(s)	ALL	Selection	Antenna 1	Symbols meas.	140
EVM All	7.76	8.32		8.93		%	
EVM Phys. Channel	7.71	8.29		8.88		%	
EVM Phys. Signal	8.14	8.84		9.60		%	
Frequency Error	- 3.60	0.11		4.45		Hz	
Sampling Error	- 1.34	- 0.08		1.02		ppm	
IQ Offset	- 51.62	- 47.91		- 44.76		dB	
IQ Gain Imbalance	- 0.03	0.01		0.04		dB	
IQ Quadrature Error	- 0.30	0.04		0.17		°	
OSTP	13.73	13.87		13.99		dBm	
Power	13.83	13.87		13.89		dBm	
Crest Factor		6.25				dB	

Running ...

Date: 22.APR.2010 13:10:00

TM3.3: QPSK

No.5090 (M) 737MHz	EUTRA/LTE						
	Freq: 737 MHz	Meas Setup: 1 TX x 1 RX		Ext. Att: 35 dB			
	Mode: DL FDD, 50 RB (10 MHz), Normal (CP)	Sync State: OK		Capture Time: 20.1 ms			
	CONTINUOUS	TRG: FREE RUN	EXT REF	RF			
	Result Summary						
	Frame Results	Min	Mean	Limit	Max	Limit	Unit
	EVM PDSCH QPSK		11.35	17.50			%
	EVM PDSCH 16QAM		6.08	12.50			%
	EVM PDSCH 64QAM			8.00			%
	Results for Selection	Subframe(s)	ALL	Selection	Antenna 1	Symbols meas.	140
EVM All	7.97	9.03		9.98		%	
EVM Phys. Channel	8.01	9.10		10.09		%	
EVM Phys. Signal	6.73	7.62		8.59		%	
Frequency Error	- 2.37	0.36		3.67		Hz	
Sampling Error	- 0.73	0.31		1.30		ppm	
IQ Offset	- 50.44	- 48.90		- 47.03		dB	
IQ Gain Imbalance	- 0.03	0.01		0.05		dB	
IQ Quadrature Error	- 0.29	- 0.05		0.16		°	
OSTP	13.58	13.87		14.05		dBm	
Power	13.78	13.89		13.94		dBm	
Crest Factor		6.38				dB	

Running ...

Date: 22.APR.2010 13:10:33

BW: 15M
TM2.0: 64QAM



No.5090 (M) 737MHz	EUTRA/LTE						
	Freq: 737 MHz		Meas Setup: 1 TX x 1 RX		Ext. Att: 35 dB		
Mode: DL FDD, 75 RB (15 MHz), Normal (CP)		Sync State: OK		Capture Time: 20.1 ms			
CONTINUOUS TRG: FREE RUN EXT REF RF							
Result Summary							
Frame Results		Min	Mean	Limit	Max	Limit	Unit
EVM PDSCH QPSK				17.50			%
EVM PDSCH 16QAM				12.50			%
EVM PDSCH 64QAM			0.91	8.00			%
Results for Selection		Subframe(s)	ALL	Selection	Antenna 1	Symbols meas.	140
EVM All		0.71	0.74		0.82		%
EVM Phys. Channel		0.76	0.85		1.06		%
EVM Phys. Signal		0.67	0.69		0.70		%
Frequency Error		- 0.74	0.00		0.72		Hz
Sampling Error		- 0.03	0.01		0.03		ppm
IQ Offset		- 44.67	- 43.35		- 43.06		dB
IQ Gain Imbalance							dB
IQ Quadrature Error							°
OSTP		- 6.11	- 4.85		- 3.83		dBm
Power		2.35	2.63		3.94		dBm
Crest Factor			15.88				dB
Running ...							
Date: 22.APR.2010 11:55:54							

TM3.1: 64QAM

No.5090 (M) 737MHz	EUTRA/LTE						
	Freq: 737 MHz		Meas Setup: 1 TX x 1 RX		Ext. Att: 35 dB		
Mode: DL FDD, 75 RB (15 MHz), Normal (CP)		Sync State: OK		Capture Time: 20.1 ms			
CONTINUOUS TRG: FREE RUN EXT REF RF							
Result Summary							
Frame Results		Min	Mean	Limit	Max	Limit	Unit
EVM PDSCH QPSK				17.50			%
EVM PDSCH 16QAM				12.50			%
EVM PDSCH 64QAM			4.48	8.00			%
Results for Selection		Subframe(s)	ALL	Selection	Antenna 1	Symbols meas.	140
EVM All		4.04	4.51		4.96		%
EVM Phys. Channel		4.04	4.49		4.94		%
EVM Phys. Signal		4.02	4.79		5.54		%
Frequency Error		- 1.74	0.03		2.03		Hz
Sampling Error		- 0.41	- 0.09		0.08		ppm
IQ Offset		- 54.68	- 52.53		- 50.80		dB
IQ Gain Imbalance		- 0.01	- 0.00		0.02		dB
IQ Quadrature Error		- 0.15	- 0.04		0.09		°
OSTP		13.65	13.84		13.98		dBm
Power		13.78	13.83		13.86		dBm
Crest Factor			7.22				dB
Running ...							
Date: 22.APR.2010 11:56:19							

TM3.2: 16QAM



No.5090 (M)
737MHz

EUTRA/LTE						
Freq:	737 MHz	Meas Setup:	1 TX x 1 RX	Ext. Att:	35 dB	
Mode:	DL FDD, 75 RB (15 MHz), Normal (CP)	Sync State:	OK	Capture Time:	20.1 ms	
CONTINUOUS	TRG: FREE RUN	EXT REF	RF			
Result Summary						
Frame Results	Min	Mean	Limit	Max	Limit	Unit
EVM PDSCH QPSK		9.11	17.50			%
EVM PDSCH 16QAM		7.49	12.50			%
EVM PDSCH 64QAM			8.00			%
Results for Selection	Subframe(s)	ALL	Selection	Antenna 1	Symbols meas.	140
EVM All		7.55	8.10		8.54	%
EVM Phys. Channel		7.55	8.07		8.51	%
EVM Phys. Signal		7.17	8.61		9.92	%
Frequency Error		- 1.47	0.17		3.07	Hz
Sampling Error		- 0.72	- 0.17		0.61	ppm
IQ Offset		- 51.91	- 48.26		- 46.44	dB
IQ Gain Imbalance		- 0.02	0.00		0.03	dB
IQ Quadrature Error		- 0.21	0.01		0.28	°
OSTP		13.77	13.85		13.96	dBm
Power		13.83	13.86		13.90	dBm
Crest Factor			6.65			dB

Running ...

Date: 22.APR.2010 13:11:56

TM3.3: QPSK

No.5090 (M)
737MHz

EUTRA/LTE						
Freq:	737 MHz	Meas Setup:	1 TX x 1 RX	Ext. Att:	35 dB	
Mode:	DL FDD, 75 RB (15 MHz), Normal (CP)	Sync State:	OK	Capture Time:	20.1 ms	
CONTINUOUS	TRG: FREE RUN	EXT REF	RF			
Result Summary						
Frame Results	Min	Mean	Limit	Max	Limit	Unit
EVM PDSCH QPSK		11.70	17.50			%
EVM PDSCH 16QAM		6.16	12.50			%
EVM PDSCH 64QAM			8.00			%
Results for Selection	Subframe(s)	ALL	Selection	Antenna 1	Symbols meas.	140
EVM All		8.81	9.28		10.04	%
EVM Phys. Channel		8.87	9.34		10.11	%
EVM Phys. Signal		6.66	8.12		9.39	%
Frequency Error		0.29	2.12		2.95	Hz
Sampling Error		- 0.69	- 0.10		0.87	ppm
IQ Offset		- 51.55	- 49.87		- 48.56	dB
IQ Gain Imbalance		- 0.02	0.00		0.03	dB
IQ Quadrature Error		- 0.22	- 0.04		0.12	°
OSTP		13.74	13.89		14.04	dBm
Power		13.76	13.85		13.89	dBm
Crest Factor			6.61			dB

Running ...

Date: 22.APR.2010 11:58:10



Appendix B

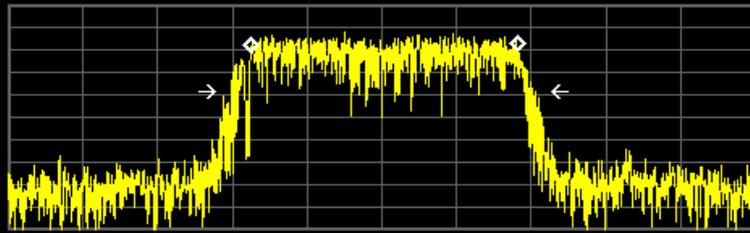
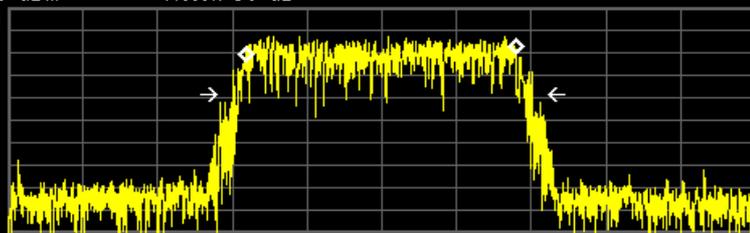
Occupied Bandwidth Measurement

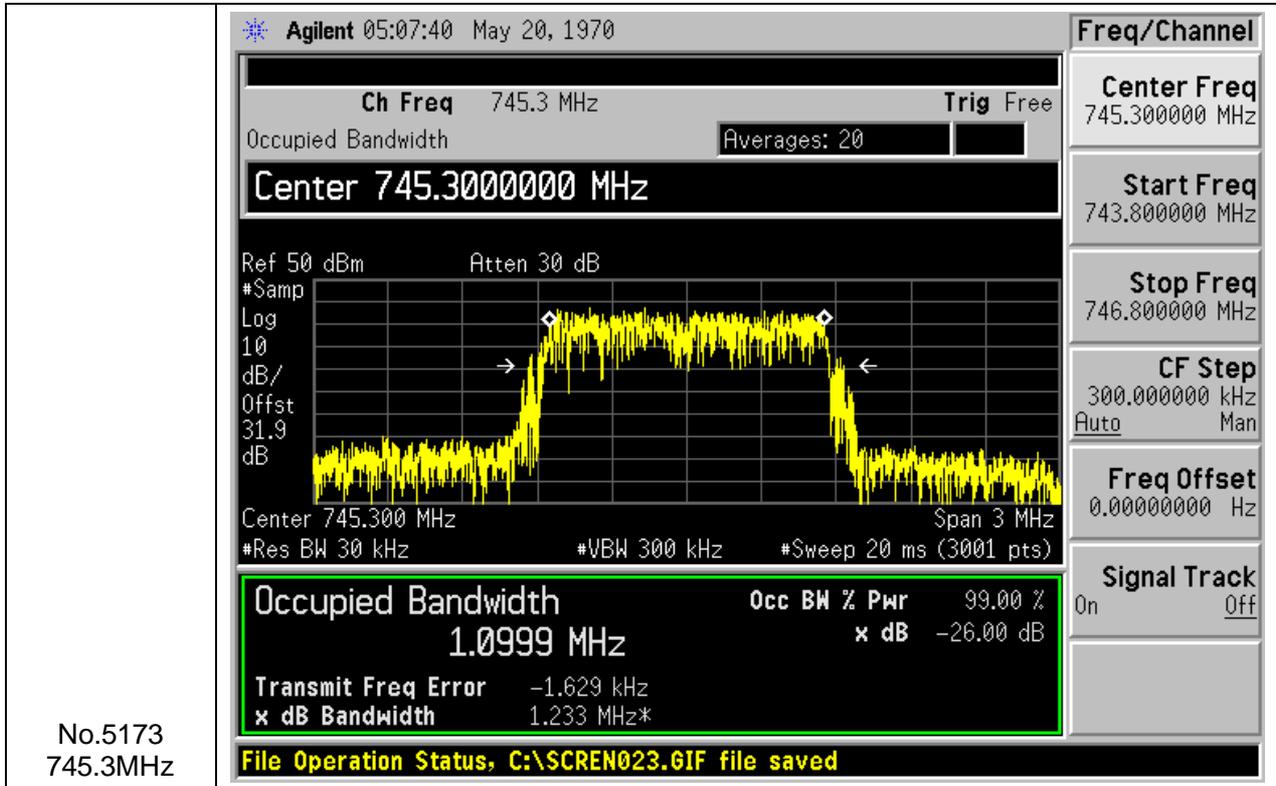
According to FCC part 2.1049 and part 27 subpart C & L



BW: 1.4M
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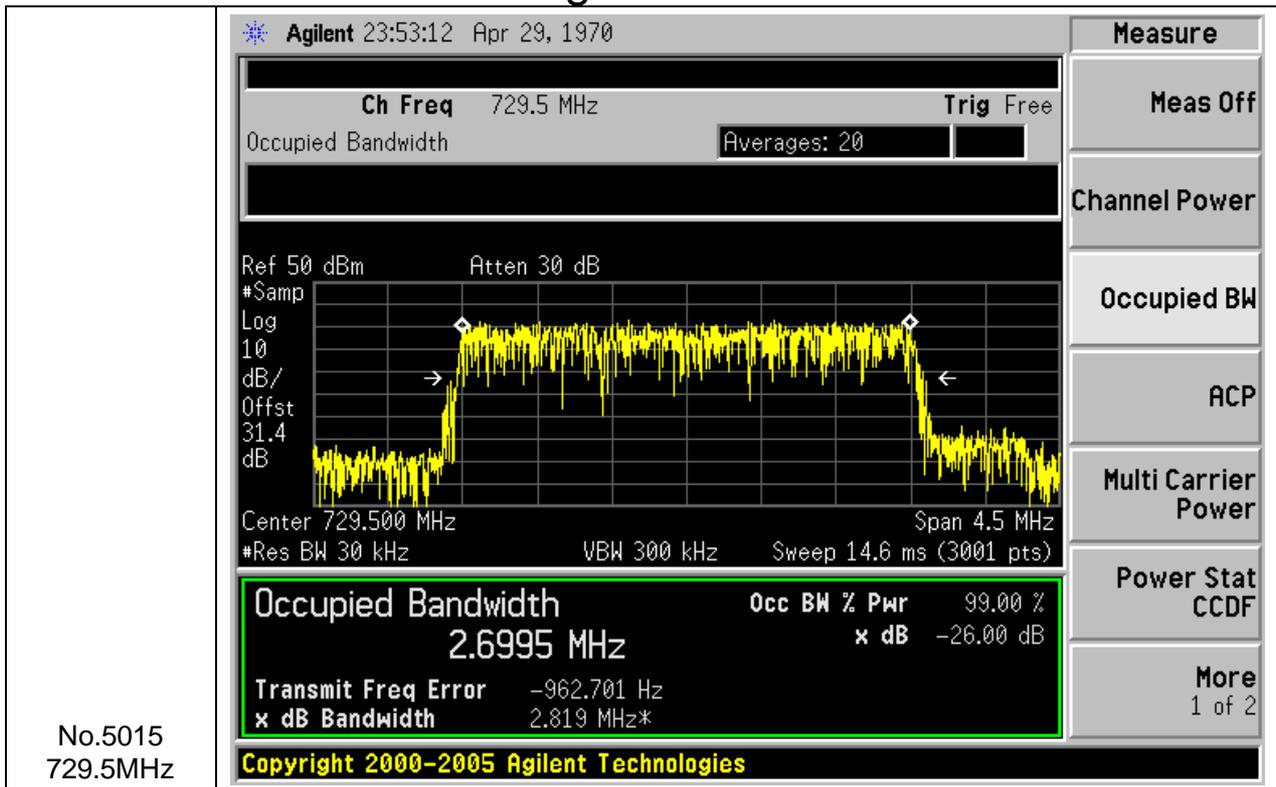
Single Carrier

No.5007 728.7MHz	<p>Agilent 05:02:38 May 20, 1970</p> <p>Ch Freq 728.7 MHz Trig Free</p> <p>Occupied Bandwidth Averages: 20</p> <p>Ref 50 dBm Atten 30 dB</p>  <p>Center 728.700 MHz Span 3 MHz #Res BW 30 kHz #VBW 300 kHz #Sweep 20 ms (3001 pts)</p> <p>Occupied Bandwidth 1.0967 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 799.467 Hz x dB Bandwidth 1.222 MHz*</p> <p>Copyright 2000-2005 Agilent Technologies</p>	<p>File</p> <p>Catalog</p> <p>Save</p> <p>Load</p> <p>Delete</p> <p>Copy</p> <p>Rename</p> <p>More 1 of 2</p>
	No.5090 737MHz	<p>Agilent 05:06:36 May 20, 1970</p> <p>Ch Freq 737 MHz Trig Free</p> <p>Occupied Bandwidth Averages: 20</p> <p>Center 737.0000000 MHz</p> <p>Ref 50 dBm Atten 30 dB</p>  <p>Center 737.000 MHz Span 3 MHz #Res BW 30 kHz #VBW 300 kHz #Sweep 20 ms (3001 pts)</p> <p>Occupied Bandwidth 1.0987 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -429.212 Hz x dB Bandwidth 1.228 MHz*</p> <p>File Operation Status, C:\SCREN022.GIF file saved</p>



BW: 3M
TM1.1:

Single Carrier



<p>No.5090 737MHz</p>	<p>Agilent 23:56:19 Apr 29, 1970</p> <p>Ch Freq 737 MHz Trig Free</p> <p>Occupied Bandwidth Averages: 20</p> <p>Ref 50 dBm Atten 30 dB</p> <p>#Samp 10</p> <p>Log dB/ Offst 31.4 dB</p> <p>Center 737.000 MHz Span 4.5 MHz</p> <p>*Res BW 30 kHz VBW 300 kHz Sweep 14.6 ms (3001 pts)</p> <p>Occupied Bandwidth 2.6902 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 1.139 kHz x dB Bandwidth 2.836 MHz*</p> <p>Copyright 2000-2005 Agilent Technologies</p>	<p>Measure</p> <p>Meas Off</p> <p>Channel Power</p> <p>Occupied BW</p> <p>ACP</p> <p>Multi Carrier Power</p> <p>Power Stat CCDF</p> <p>More 1 of 2</p>
<p>No.5165 744.5MHz</p>	<p>Agilent 23:59:27 Apr 29, 1970</p> <p>Ch Freq 744.5 MHz Trig Free</p> <p>Occupied Bandwidth Averages: 20</p> <p>Ref 50 dBm Atten 30 dB</p> <p>#Samp 10</p> <p>Log dB/ Offst 31.4 dB</p> <p>Center 744.500 MHz Span 4.5 MHz</p> <p>*Res BW 30 kHz VBW 300 kHz Sweep 14.6 ms (3001 pts)</p> <p>Occupied Bandwidth 2.6980 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 275.473 Hz x dB Bandwidth 2.825 MHz*</p> <p>Copyright 2000-2005 Agilent Technologies</p>	<p>Measure</p> <p>Meas Off</p> <p>Channel Power</p> <p>Occupied BW</p> <p>ACP</p> <p>Multi Carrier Power</p> <p>Power Stat CCDF</p> <p>More 1 of 2</p>

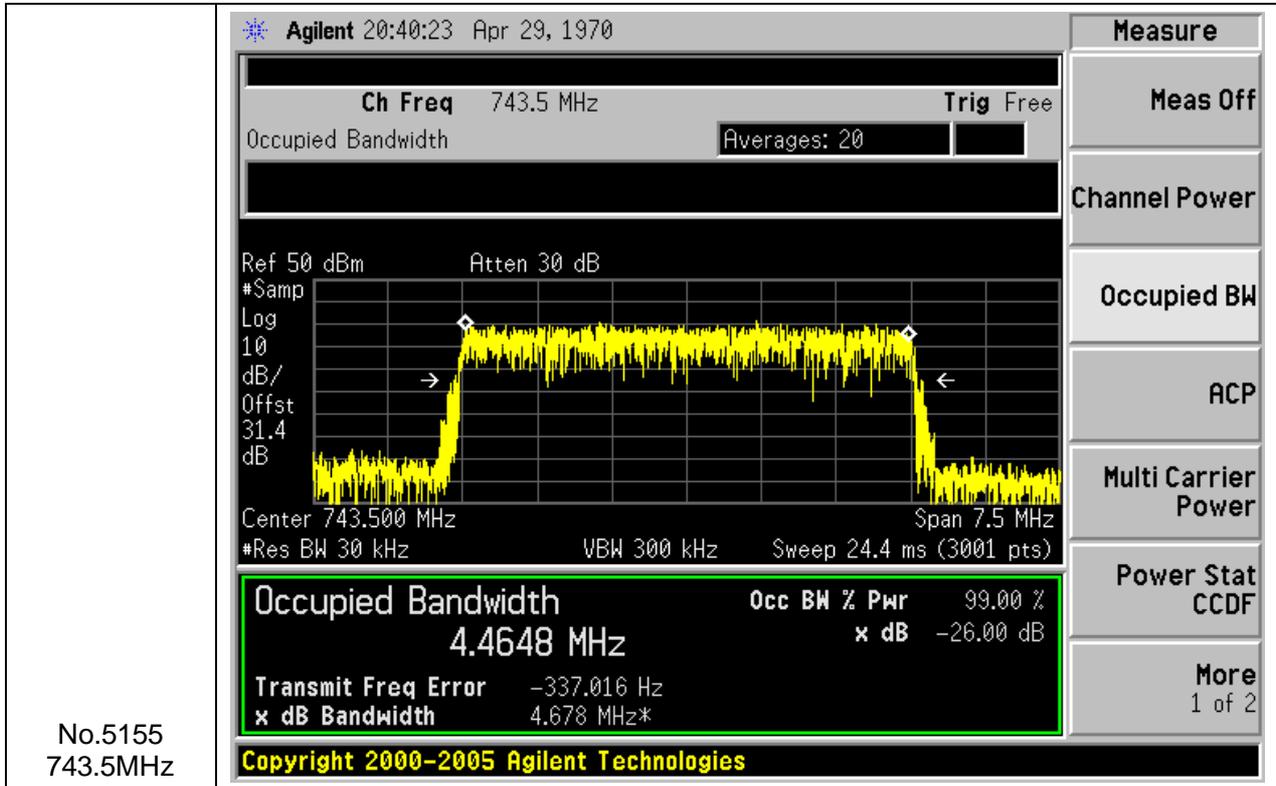
BW: 5M



TM1.1:

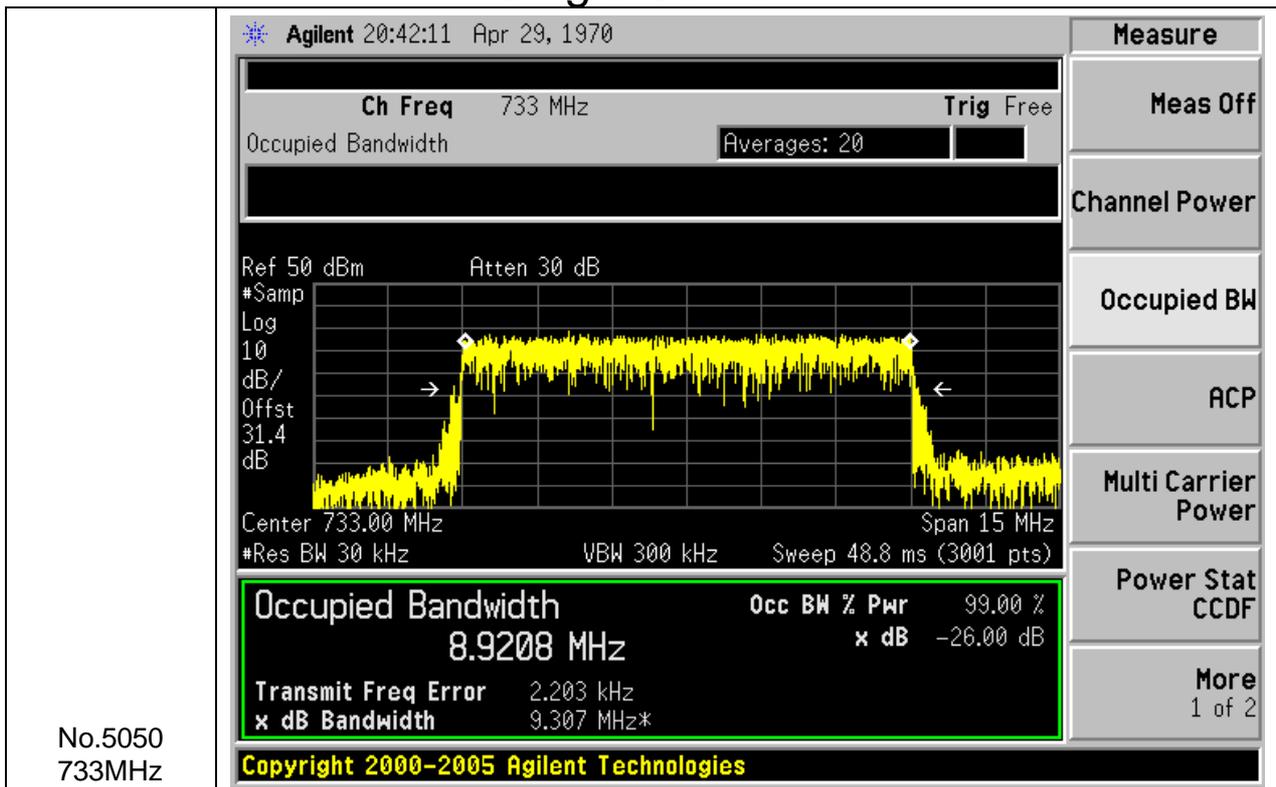
Single Carrier

<p>No.5025 730.5MHz</p>	<p>Agilent 20:33:09 Apr 29, 1970</p> <p>Ch Freq 730.5 MHz Trig Free</p> <p>Occupied Bandwidth Averages: 20</p> <p>Ref 50 dBm Atten 30 dB</p> <p>#Samp Log 10 dB/ Offst 31.4 dB</p> <p>Center 730.500 MHz Span 7.5 MHz</p> <p>#Res BW 30 kHz VBW 300 kHz Sweep 24.4 ms (3001 pts)</p> <p>Occupied Bandwidth 4.4657 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 1.033 kHz x dB Bandwidth 4.694 MHz*</p> <p>Copyright 2000-2005 Agilent Technologies</p>	<p>Measure</p> <p>Meas Off</p> <p>Channel Power</p> <p>Occupied BW</p> <p>ACP</p> <p>Multi Carrier Power</p> <p>Power Stat CCDF</p> <p>More 1 of 2</p>
	<p>No.5090 737MHz</p>	<p>Agilent 20:37:12 Apr 29, 1970</p> <p>Ch Freq 737 MHz Trig Free</p> <p>Occupied Bandwidth Averages: 20</p> <p>Ref 50 dBm Atten 30 dB</p> <p>#Samp Log 10 dB/ Offst 31.4 dB</p> <p>Center 737.000 MHz Span 7.5 MHz</p> <p>#Res BW 30 kHz VBW 300 kHz Sweep 24.4 ms (3001 pts)</p> <p>Occupied Bandwidth 4.4668 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -1.162 kHz x dB Bandwidth 4.692 MHz*</p> <p>Copyright 2000-2005 Agilent Technologies</p>



BW: 10M
TM1.1:

Single Carrier



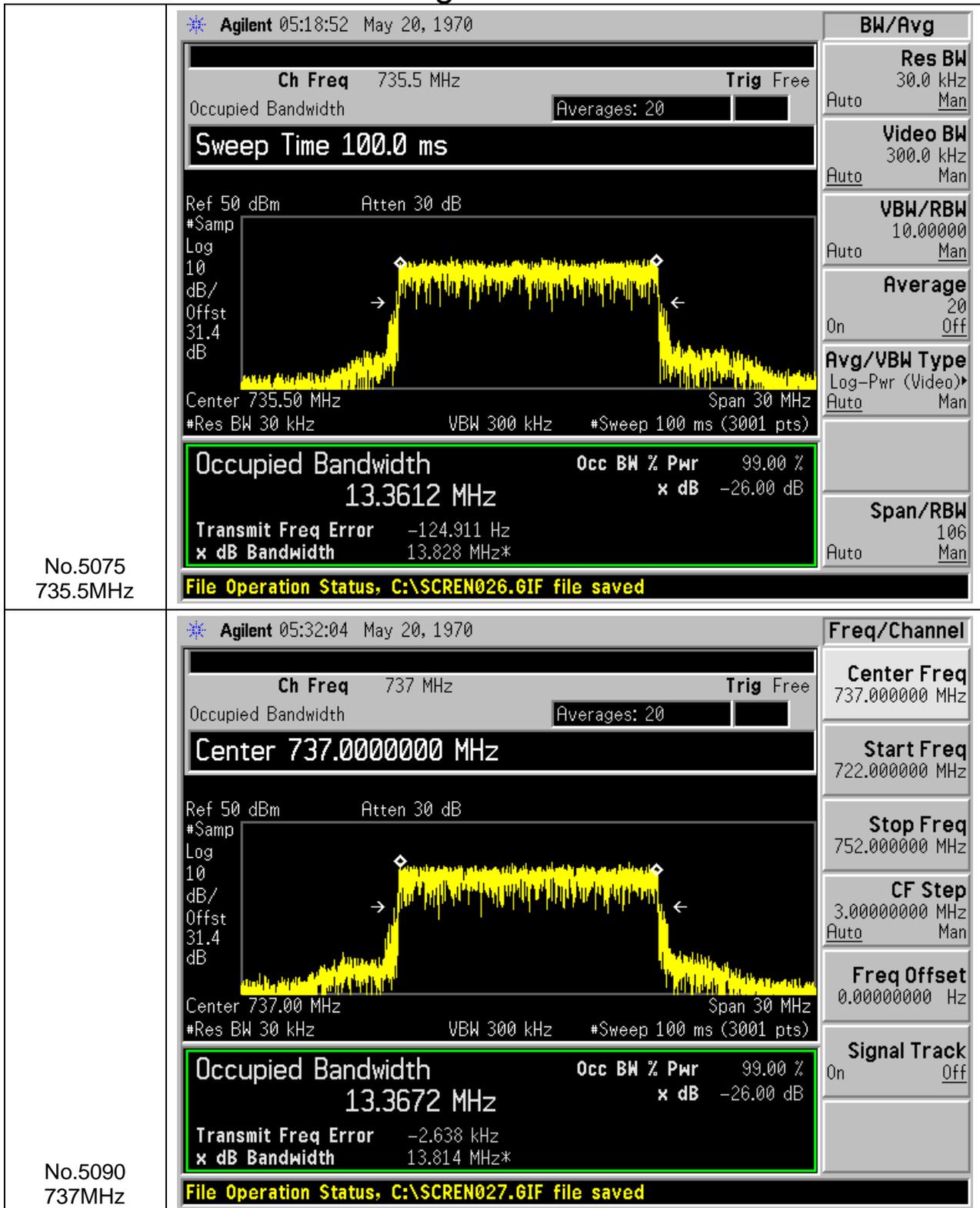


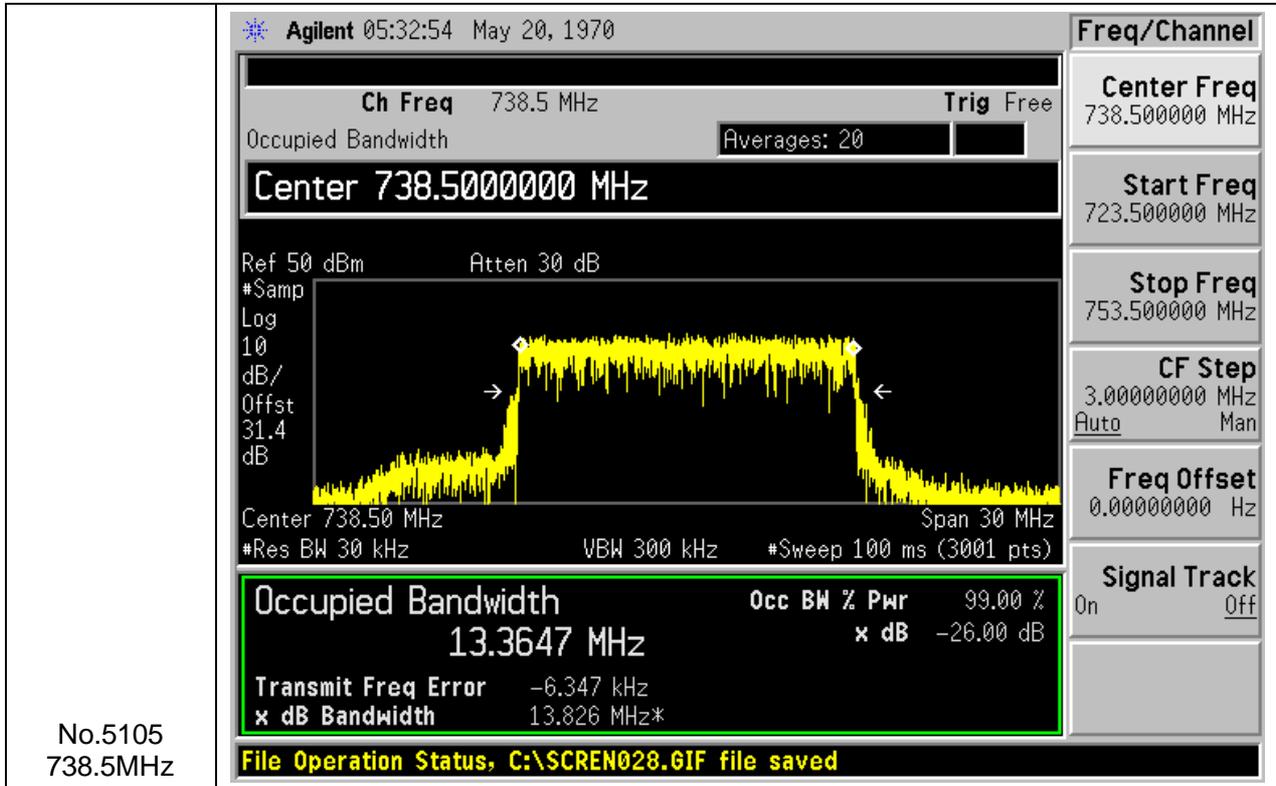
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<p>No.5130 741MHz</p>		<p>Measure</p> <p>Meas Off</p> <p>Channel Power</p> <p>Occupied BW</p> <p>ACP</p> <p>Multi Carrier Power</p> <p>Power Stat CCDF</p> <p>More 1 of 2</p>



BW: 15M
TM1.1:

Single Carrier





No.5105
 738.5MHz



Appendix C

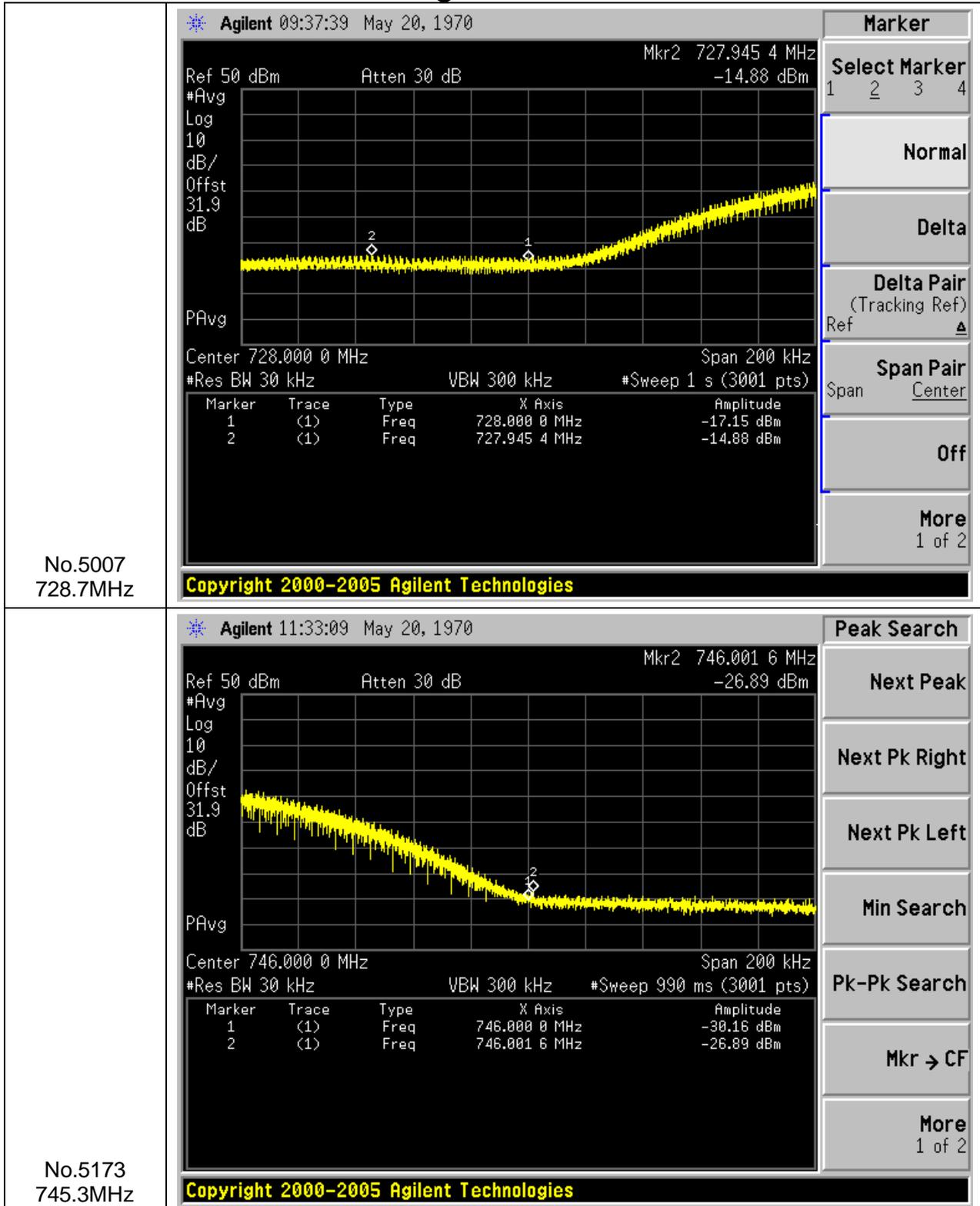
Band Edge Measurement

According to FCC part 2.1051 and part 27.53(g)



BW: 1.4M
TM1.1:

Single Carrier



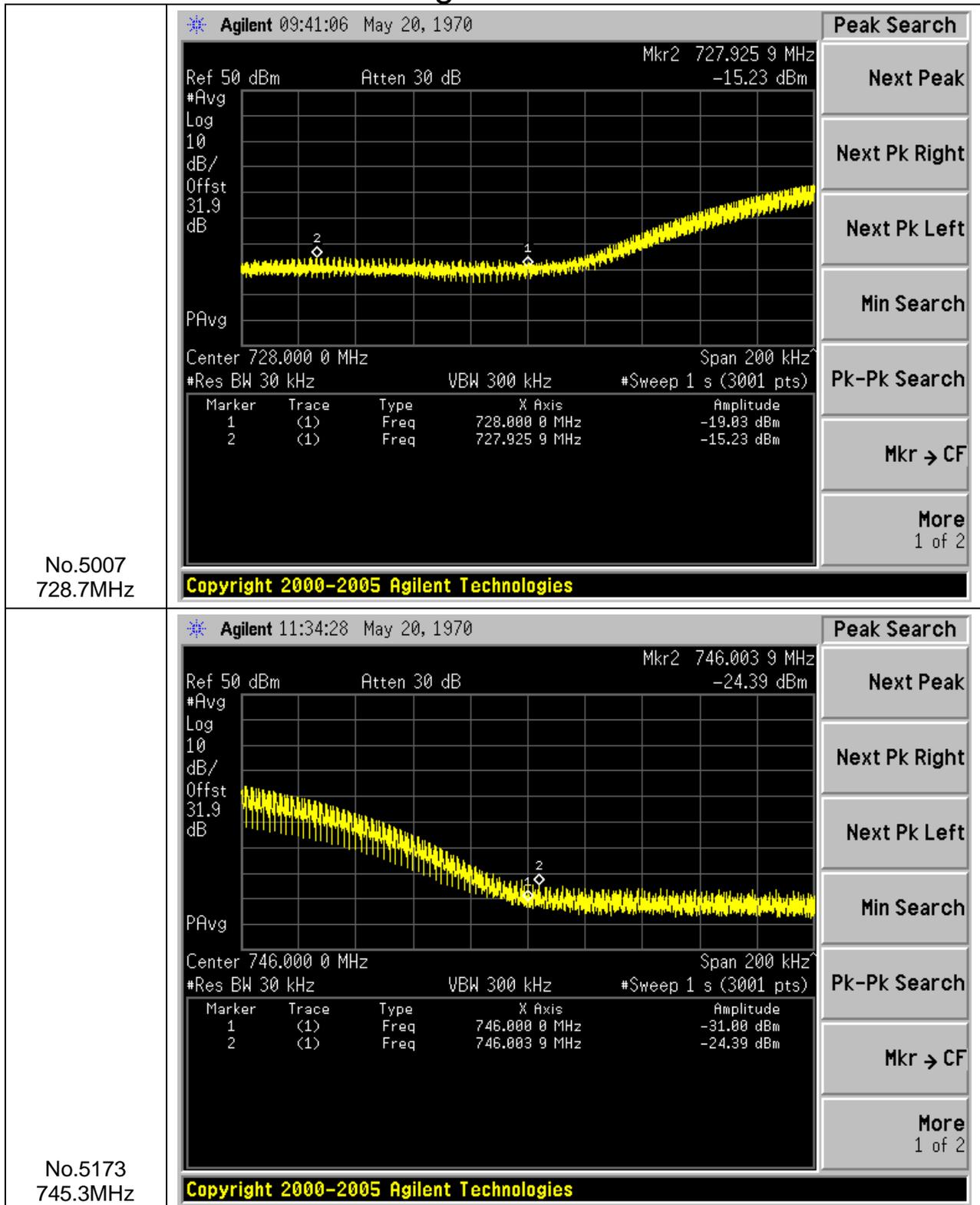
No.5007
728.7MHz

No.5173
745.3MHz



TM1.2:

Single Carrier



No.5007
728.7MHz

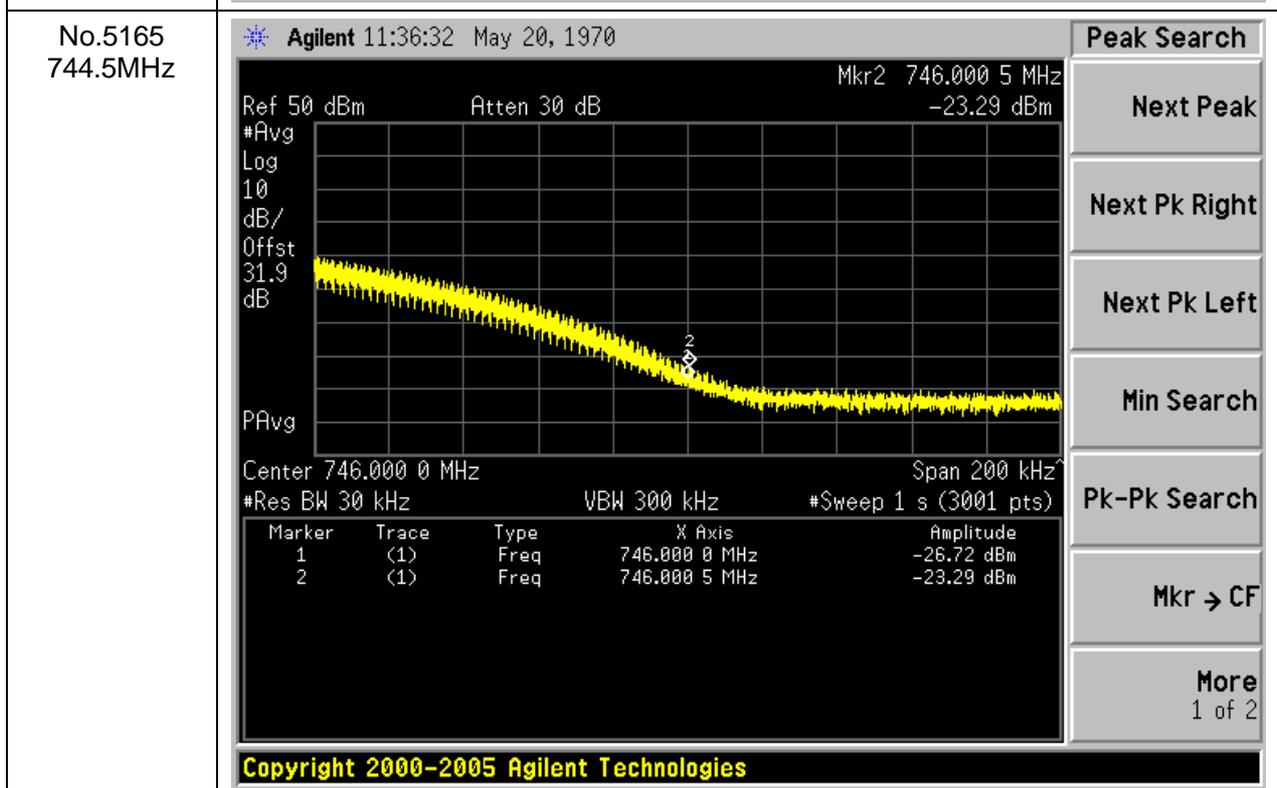
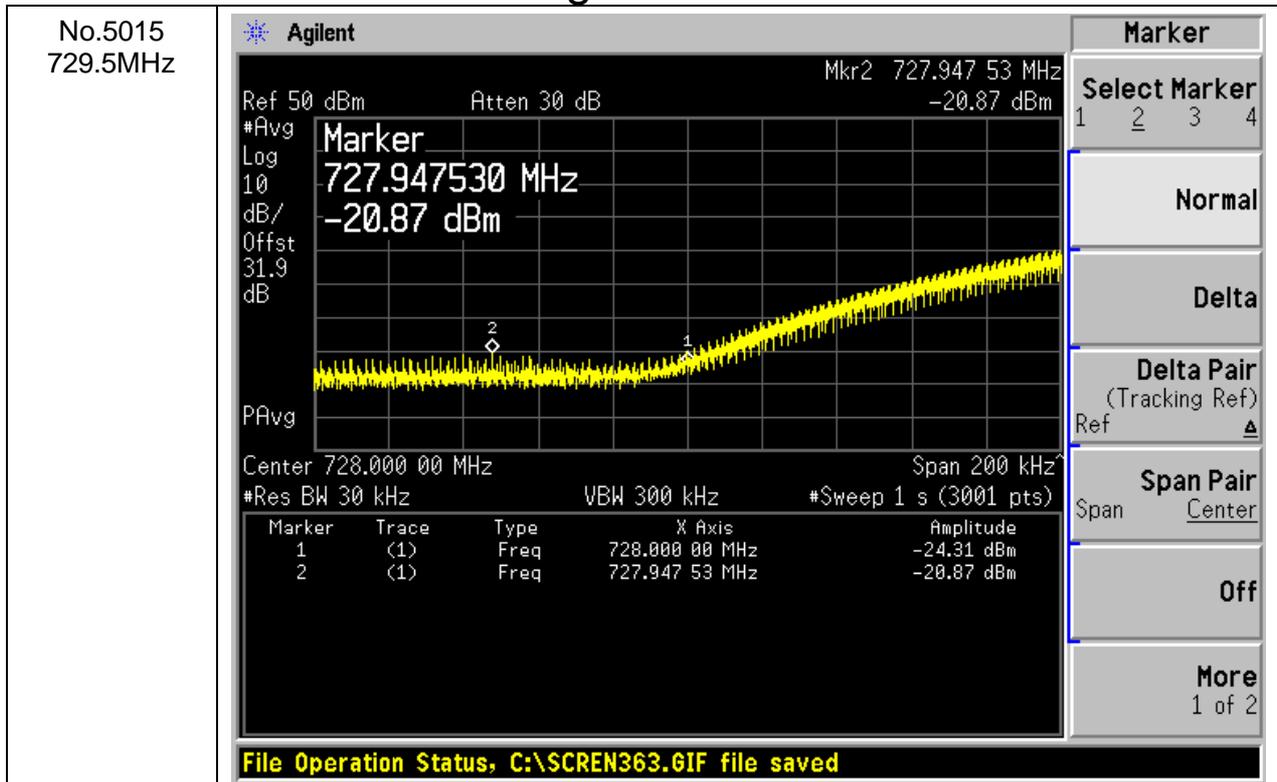
No.5173
745.3MHz

BW: 3M



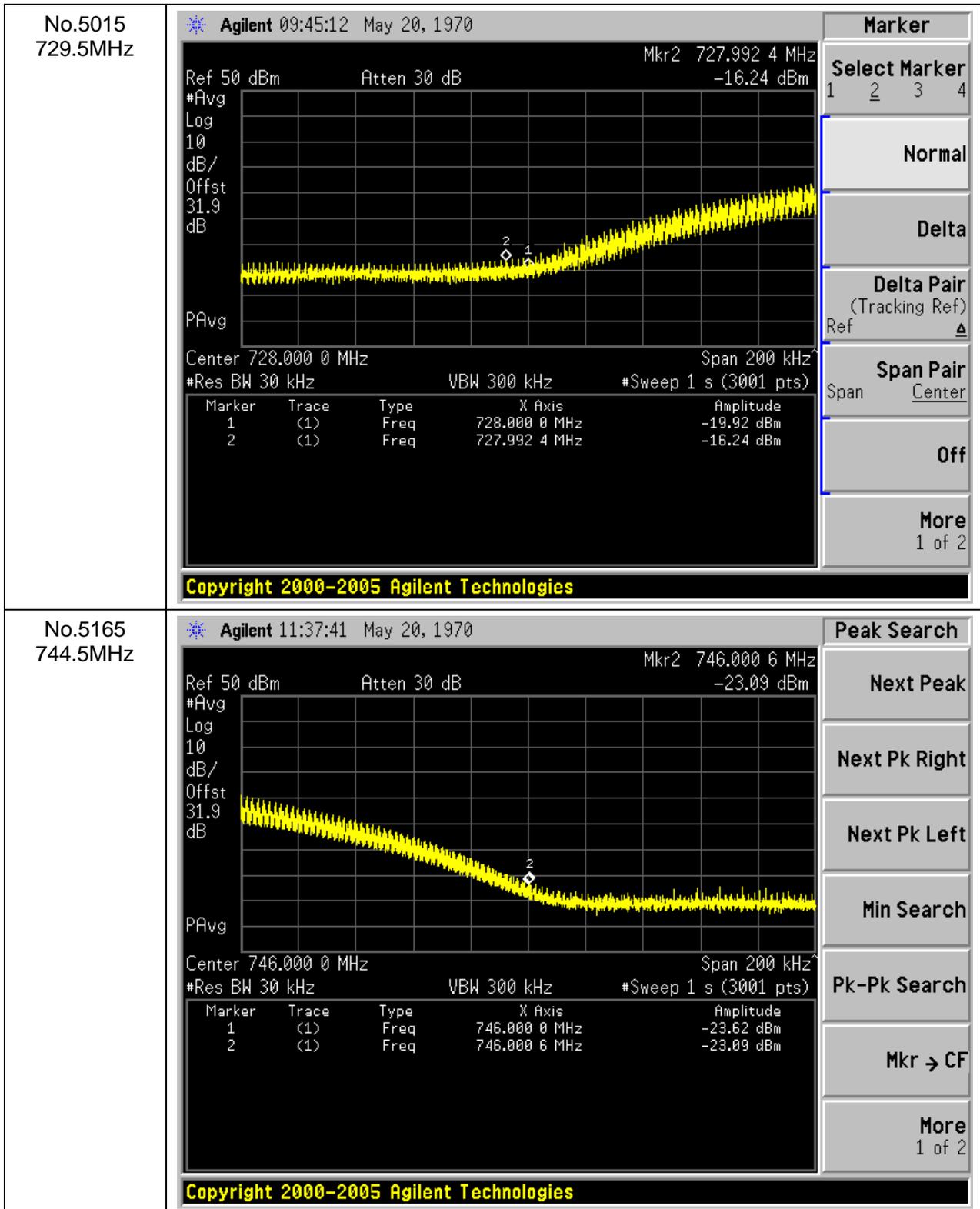
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Single Carrier



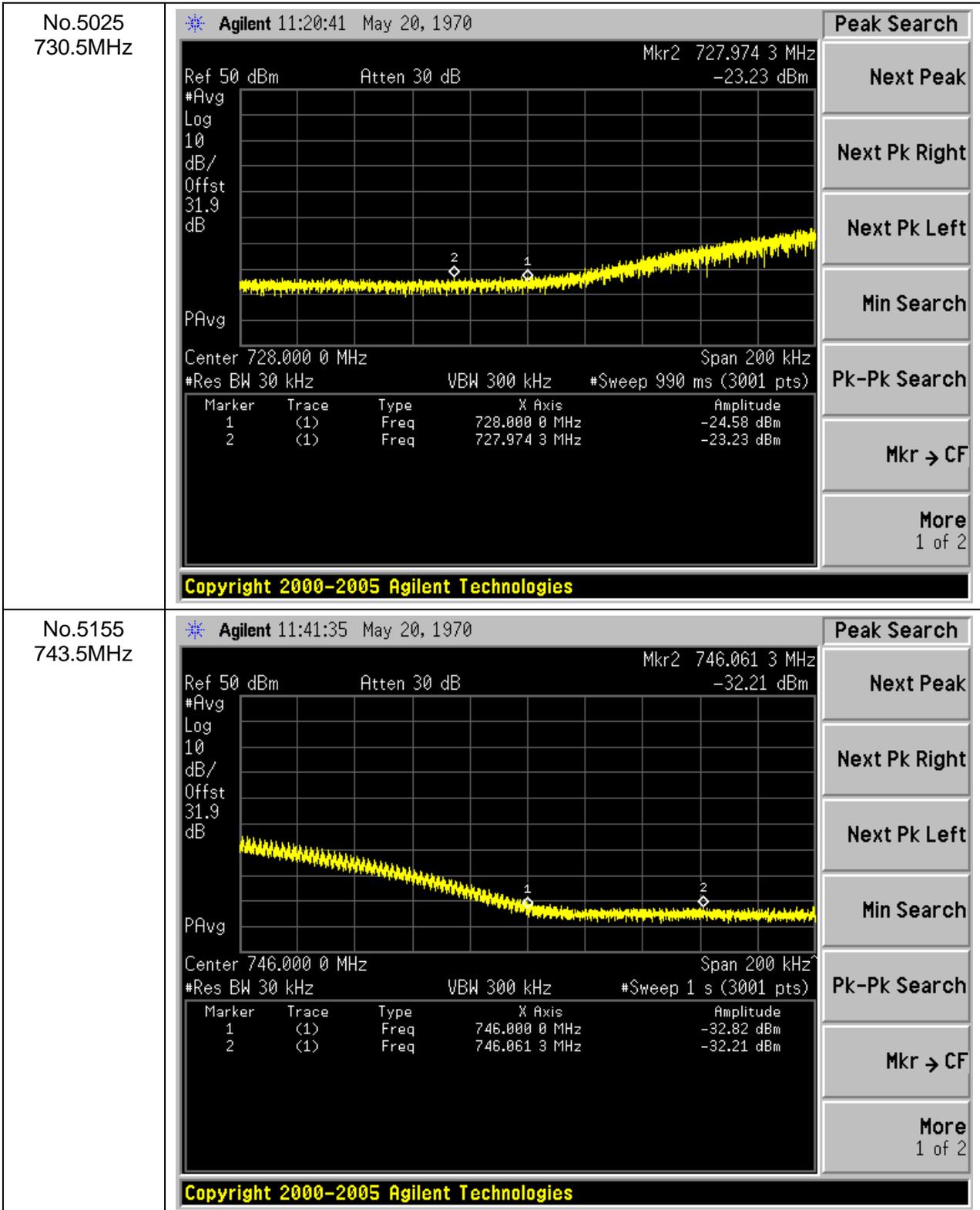
TM1.2:

Single Carrier



BW: 5M
TM1.1:

Single Carrier

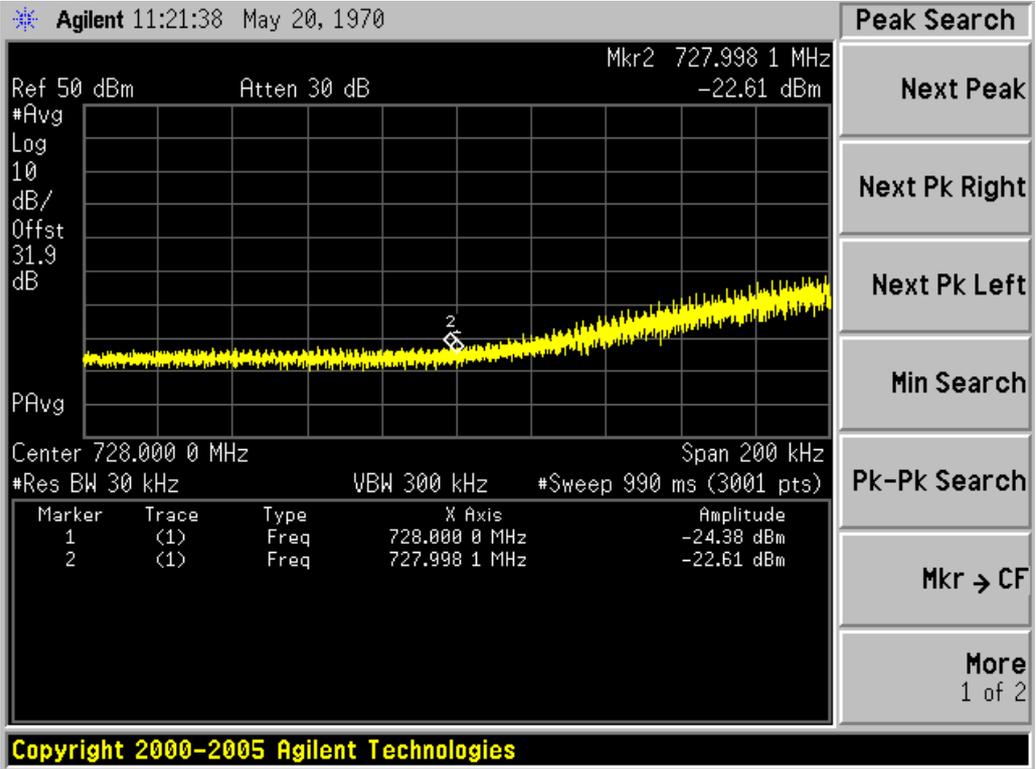


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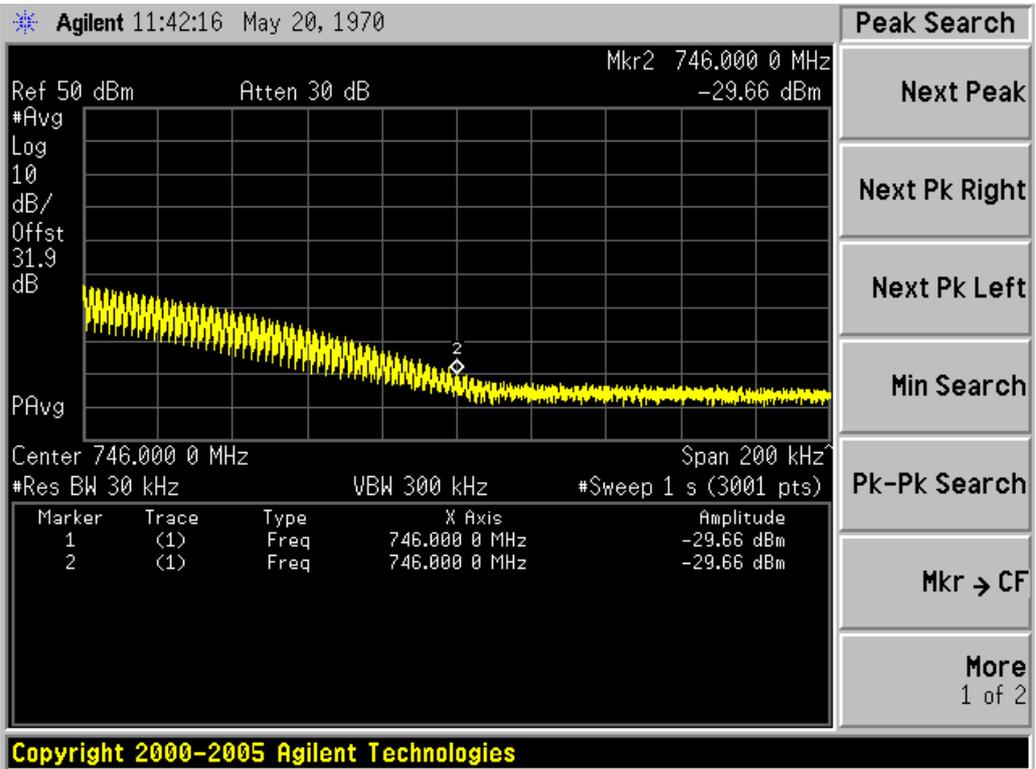
Single Carrier



No.5025 (B)
 730.5MHz

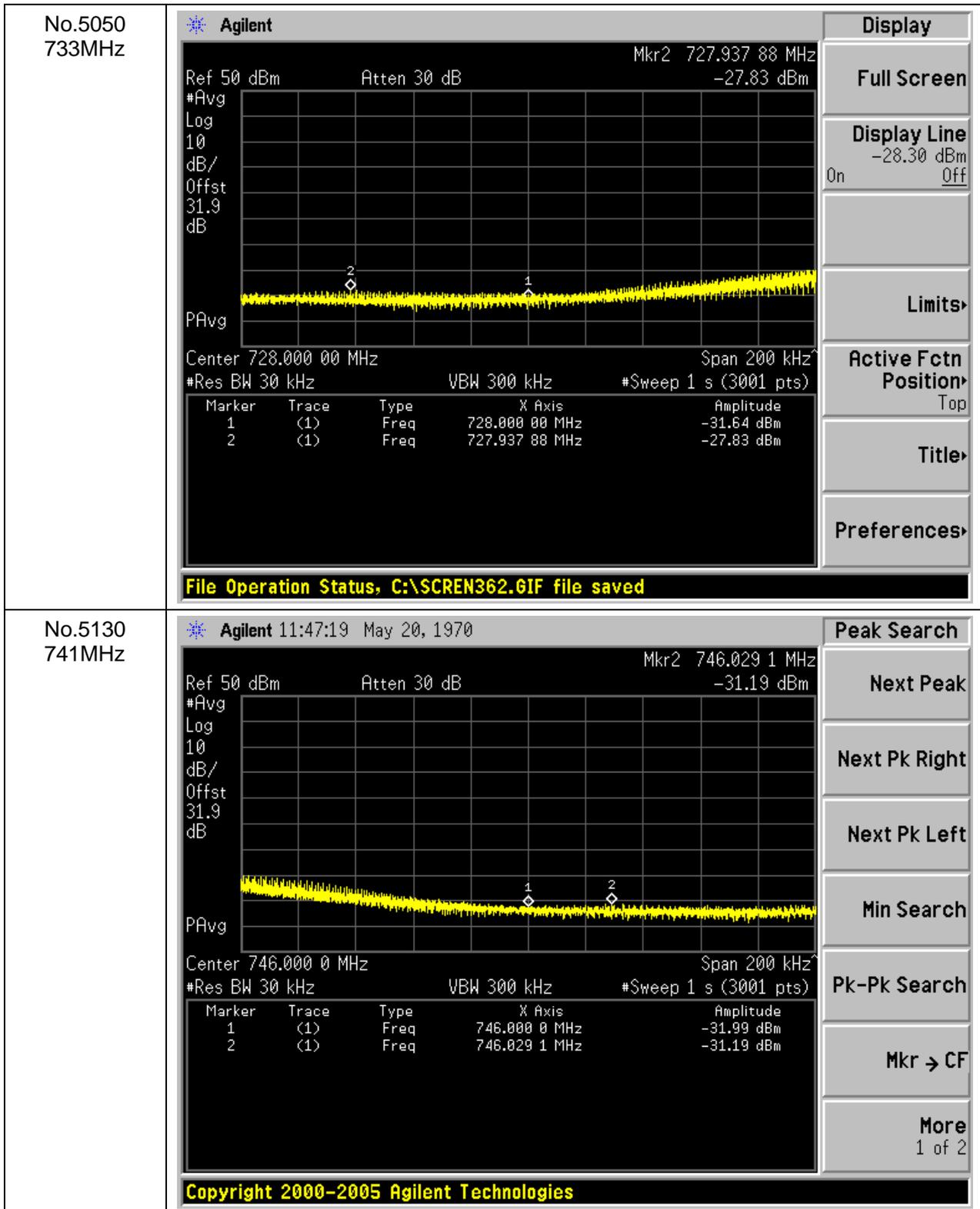


No.5155 (T)
 743.5MHz



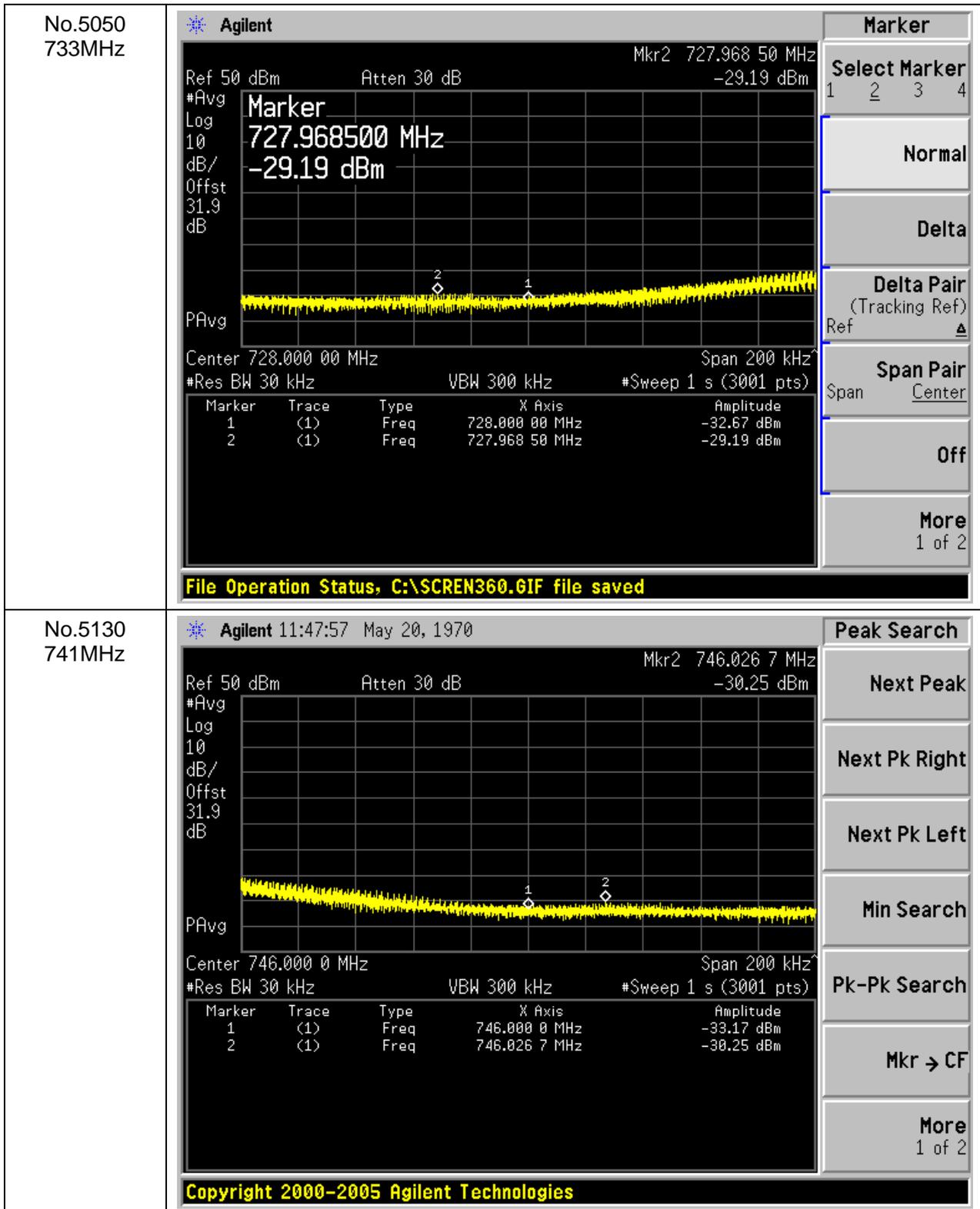
BW: 10M
 TM1.1:

Single Carrier



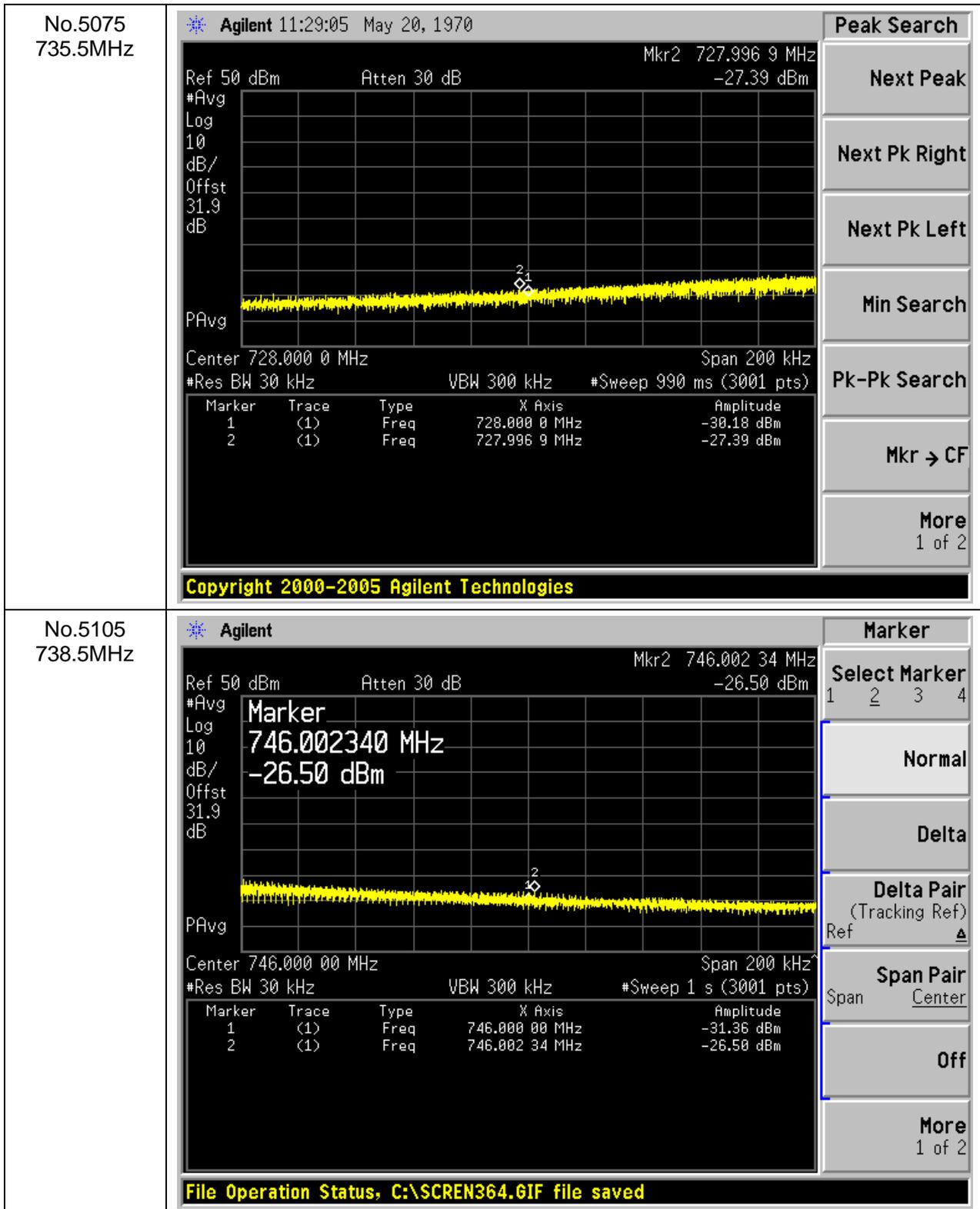
TM1.2:

Single Carrier



BW: 15M
 TM1.1:

Single Carrier



TM1.2:

Single Carrier



No.5075
735.5MHz

Agilent 11:29:54 May 20, 1970

Ref 50 dBm Atten 30 dB Mkr2 727.985 4 MHz -28.17 dBm

#Avg Log 10 dB/ Offst 31.9 dB

PAvg

Center 728.000 0 MHz Span 200 kHz
#Res BW 30 kHz VBW 300 kHz #Sweep 990 ms (3001 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	728.000 0 MHz	-31.48 dBm
2	(1)	Freq	727.985 4 MHz	-28.17 dBm

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Peak Search

Next Peak

Next Pk Right

Next Pk Left

Min Search

Pk-Pk Search

Mkr → CF

More
1 of 2

No.5105
738.5MHz

Agilent

Ref 50 dBm Atten 30 dB Mkr2 746.003 14 MHz -27.84 dBm

#Avg Log 10 dB/ Offst 31.9 dB

PAvg

Center 746.000 00 MHz Span 200 kHz
#Res BW 30 kHz VBW 300 kHz #Sweep 1 s (3001 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	746.000 00 MHz	-29.76 dBm
2	(1)	Freq	746.003 14 MHz	-27.84 dBm

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Marker

Select Marker
1 2 3 4

Normal

Delta

Delta Pair
(Tracking Ref)
Ref ▲

Span Pair
Span Center

Off

More
1 of 2



Appendix D

Spurious Emission at Antenna Terminal Measurement

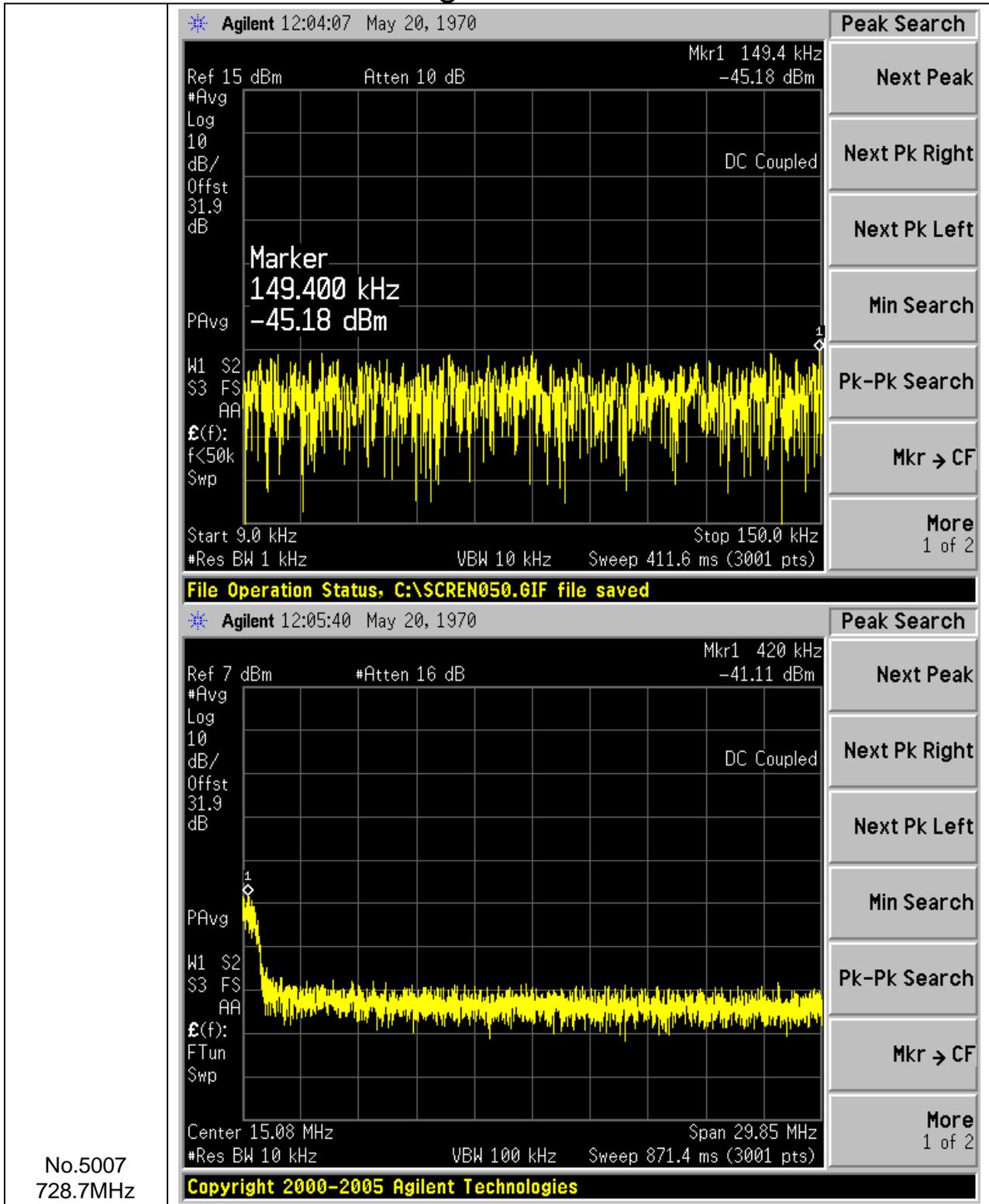
According to FCC part 2.1051 and part 27.53(g)



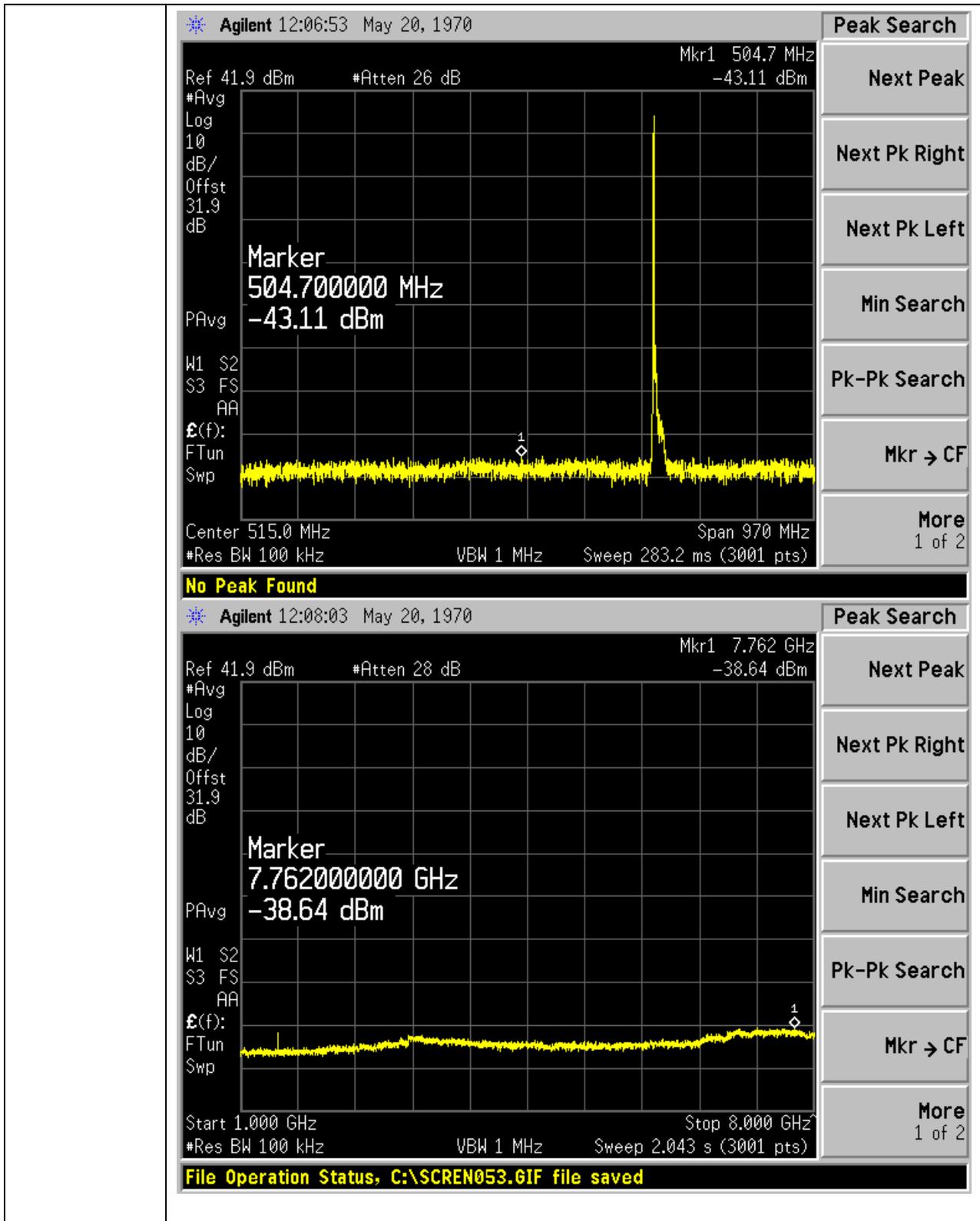
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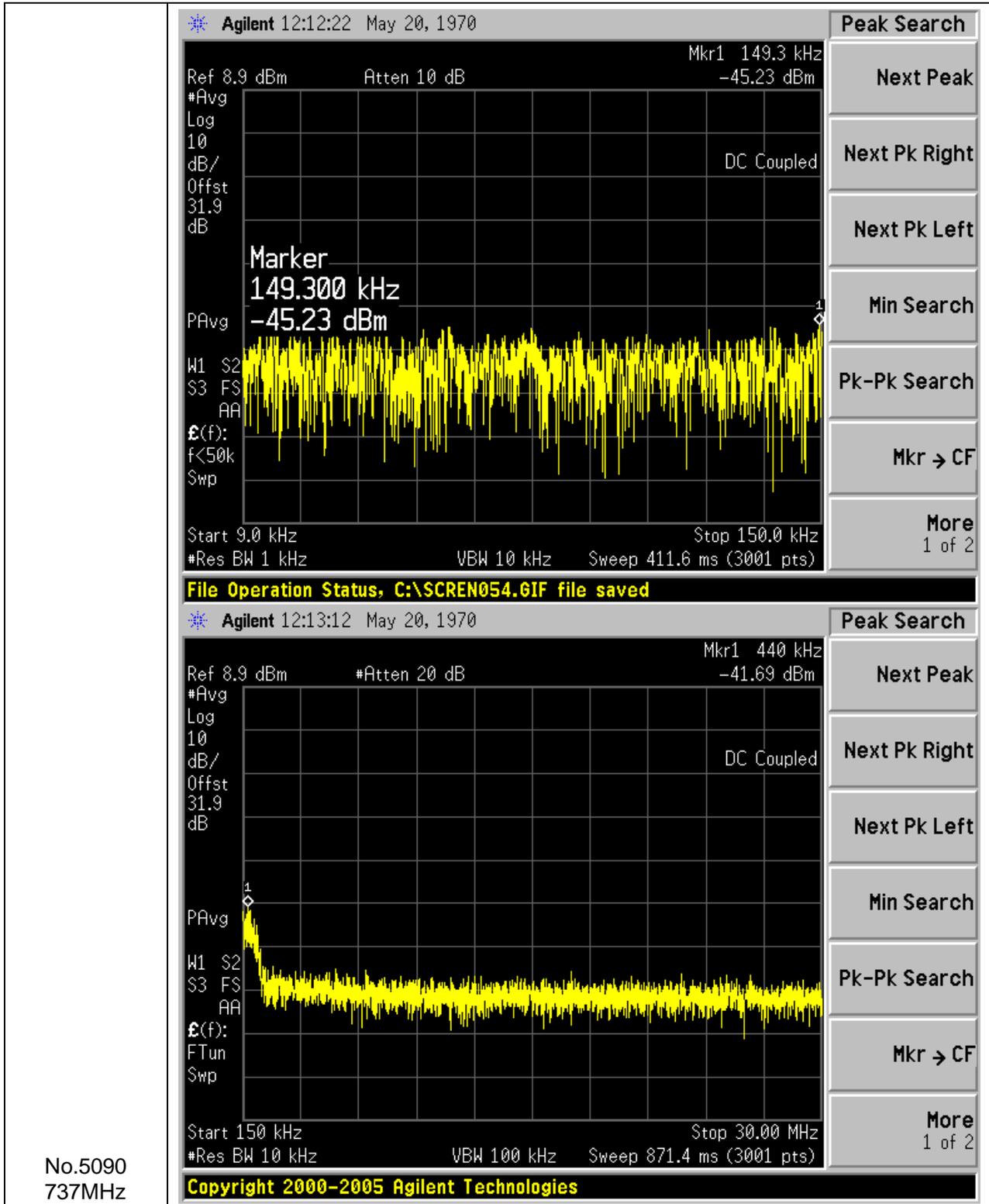
TM1.1:

Single Carrier

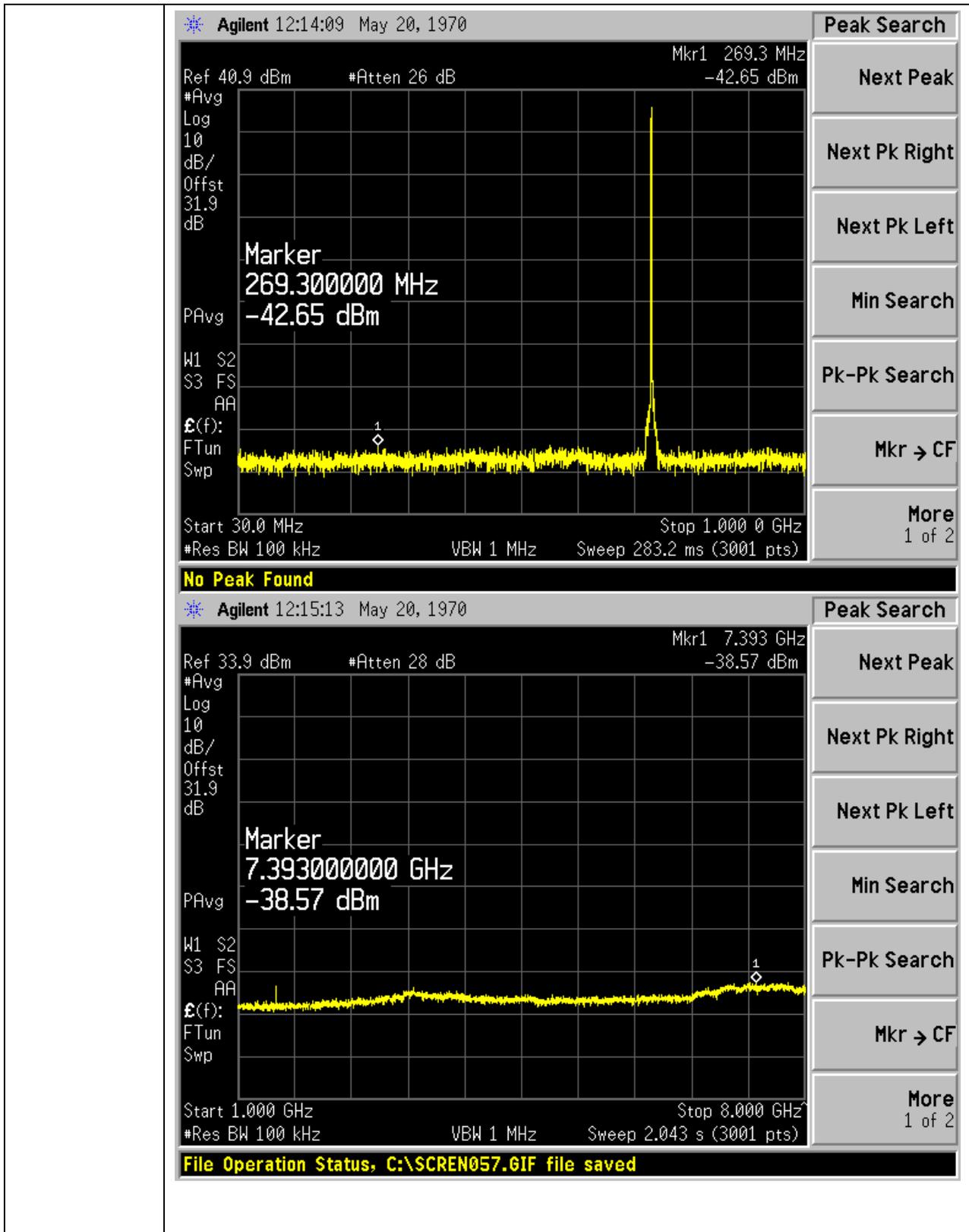


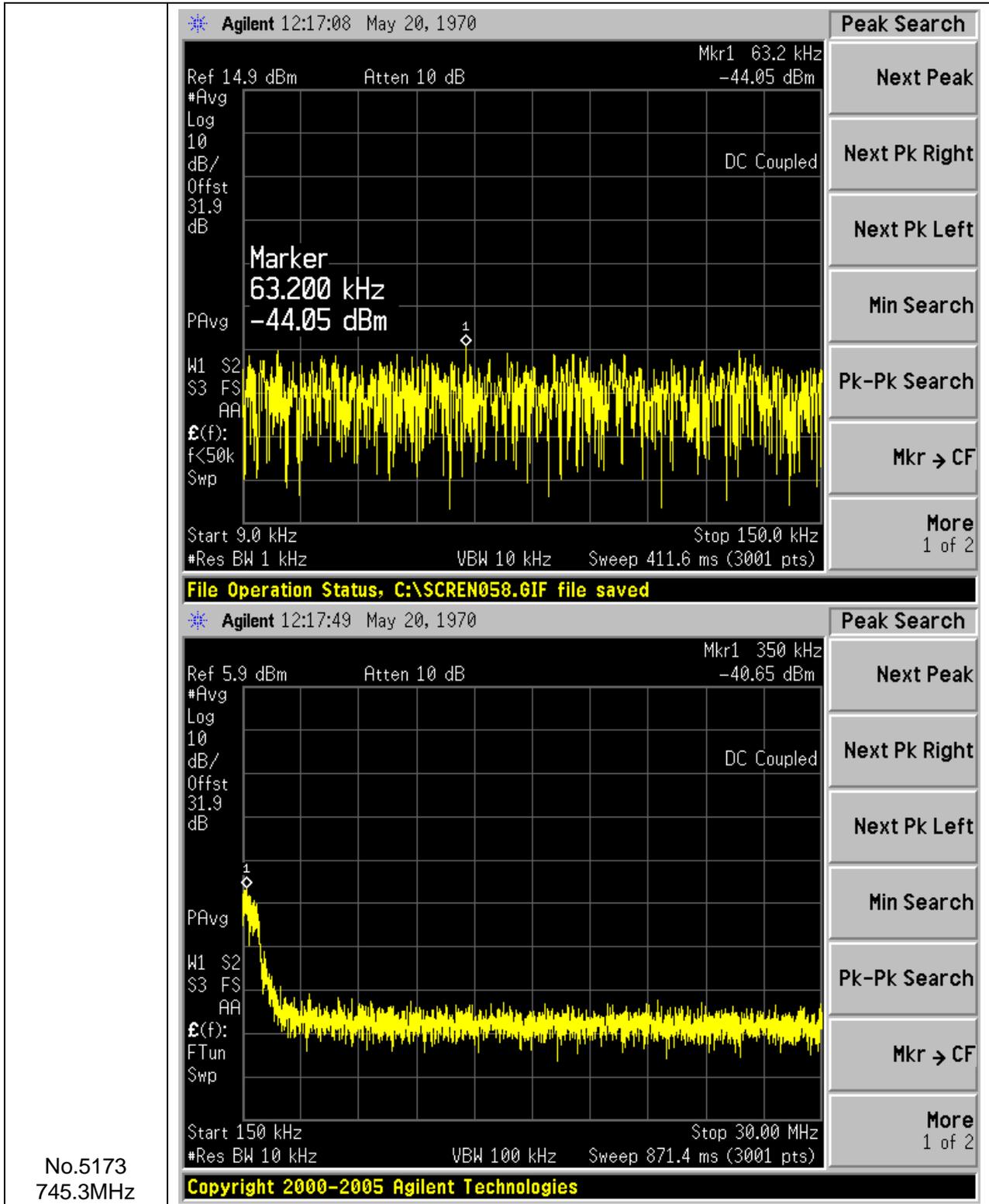
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728.7MHz



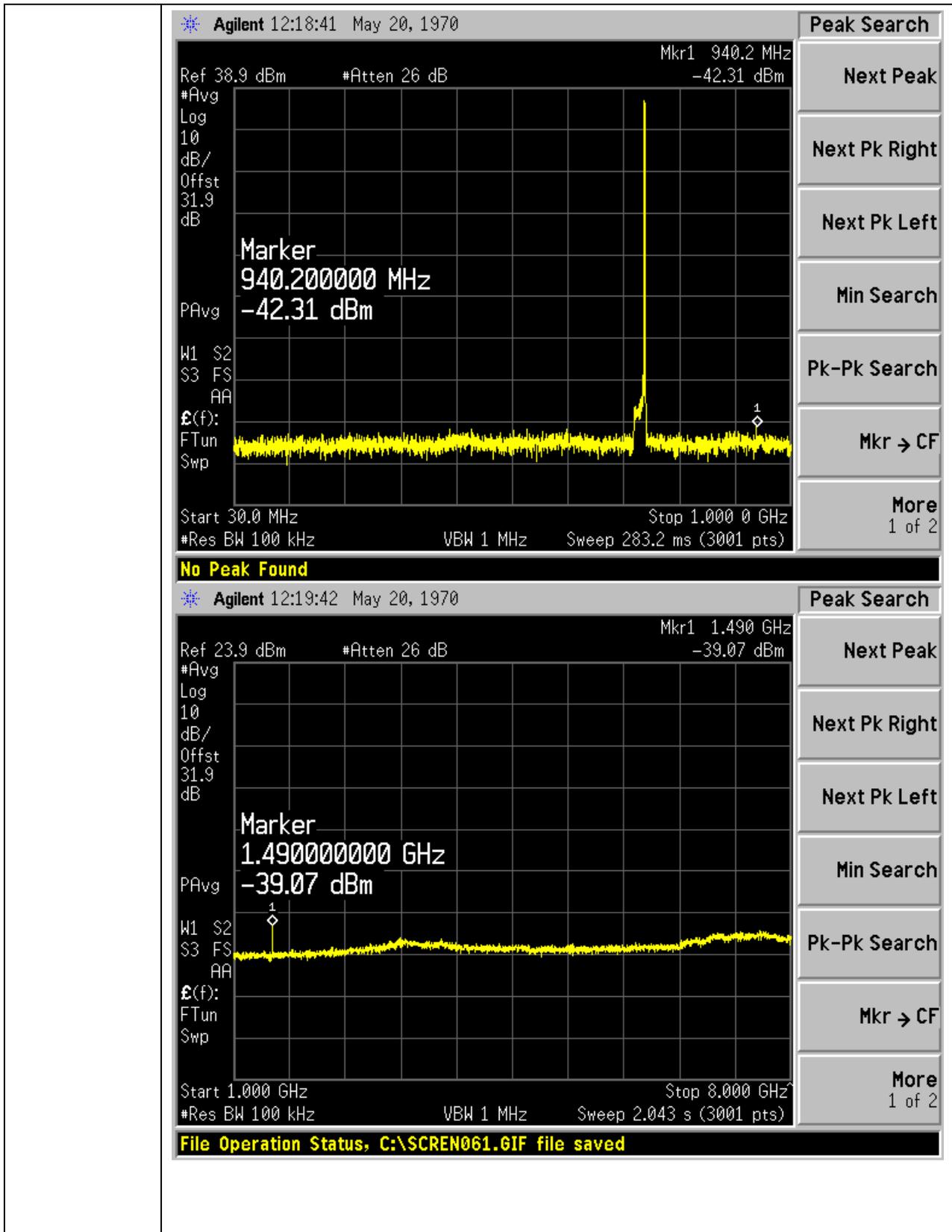


No.5090
737MHz





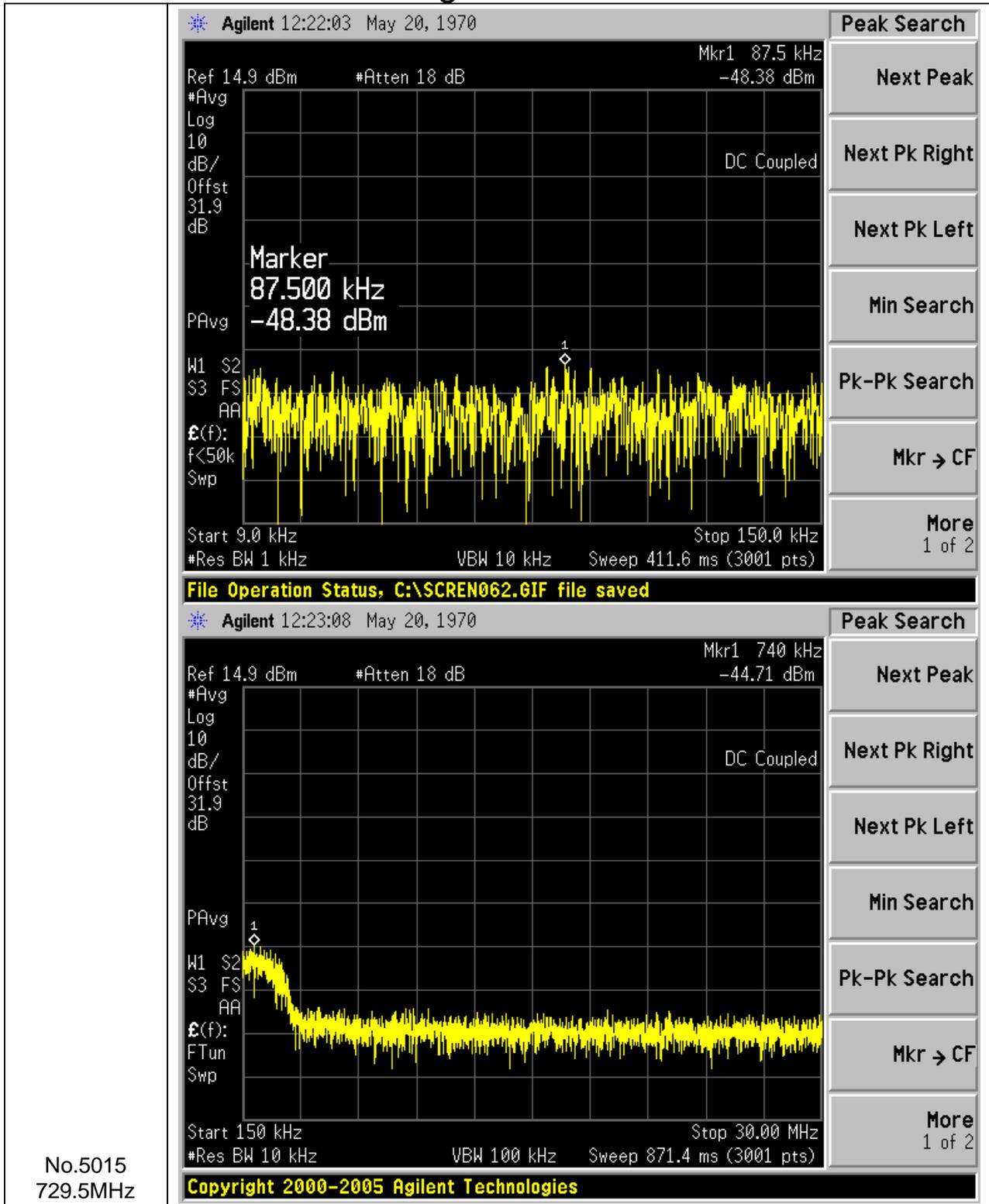
No.5173
 745.3MHz



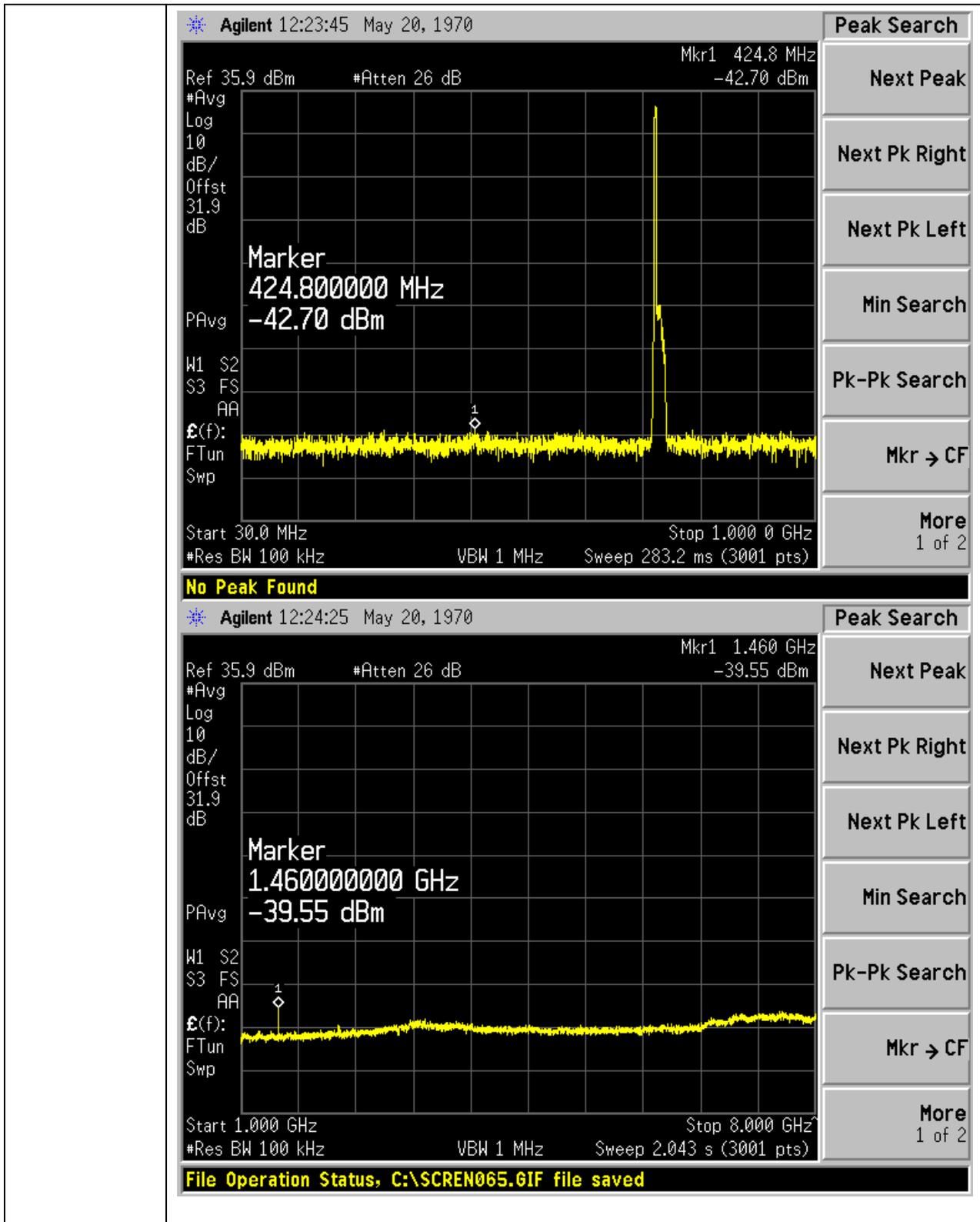


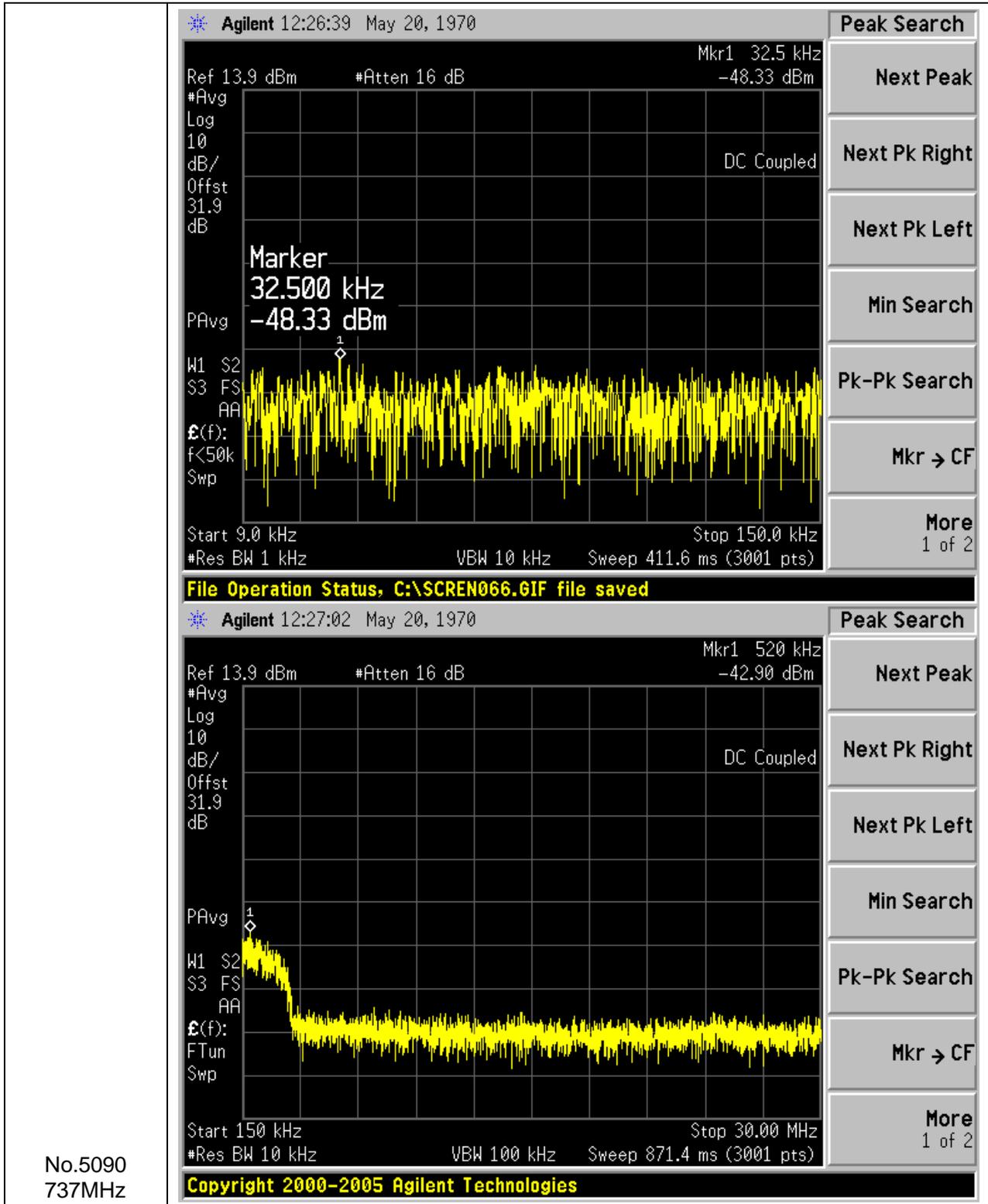
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TM1.1:

Single Carrier

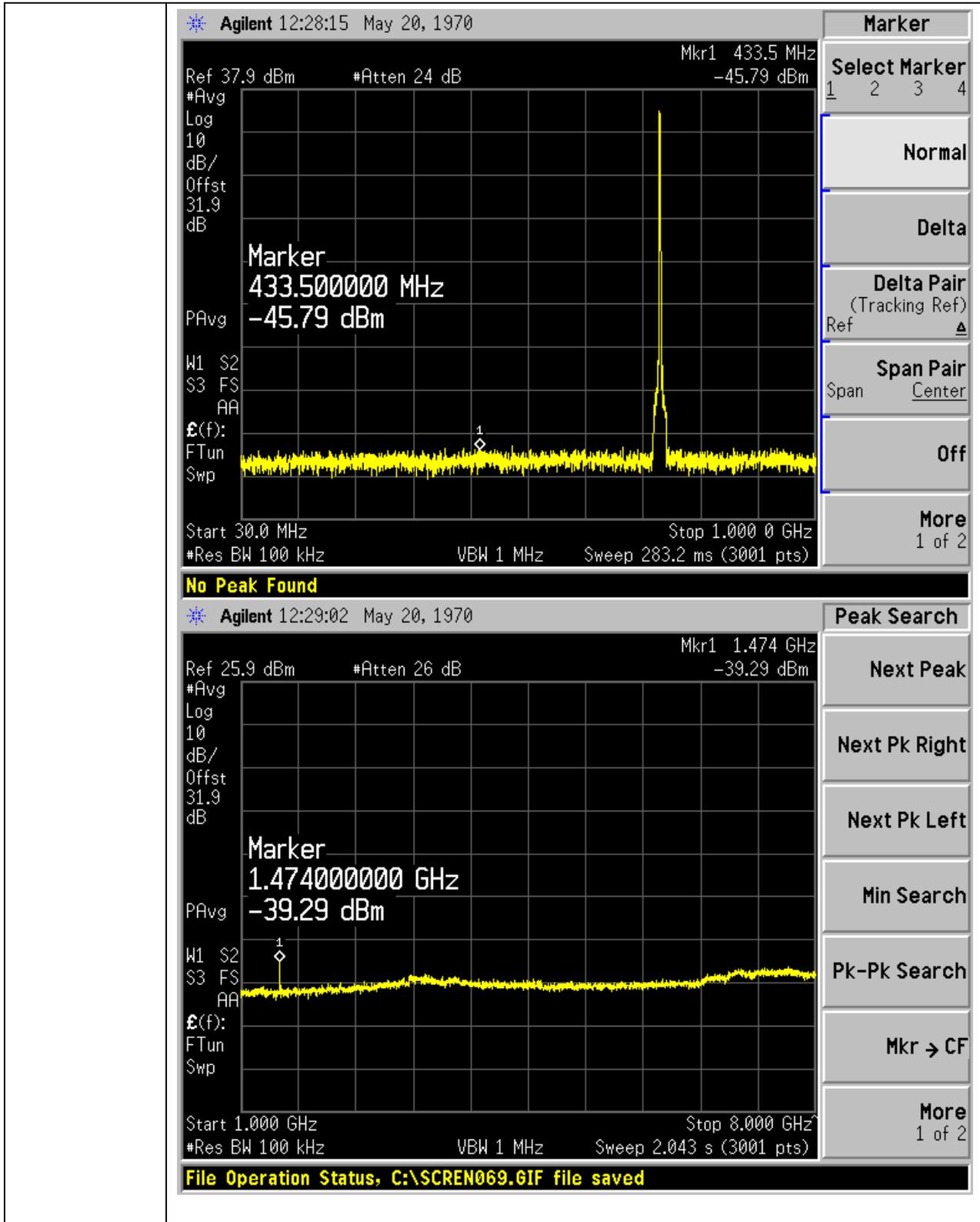


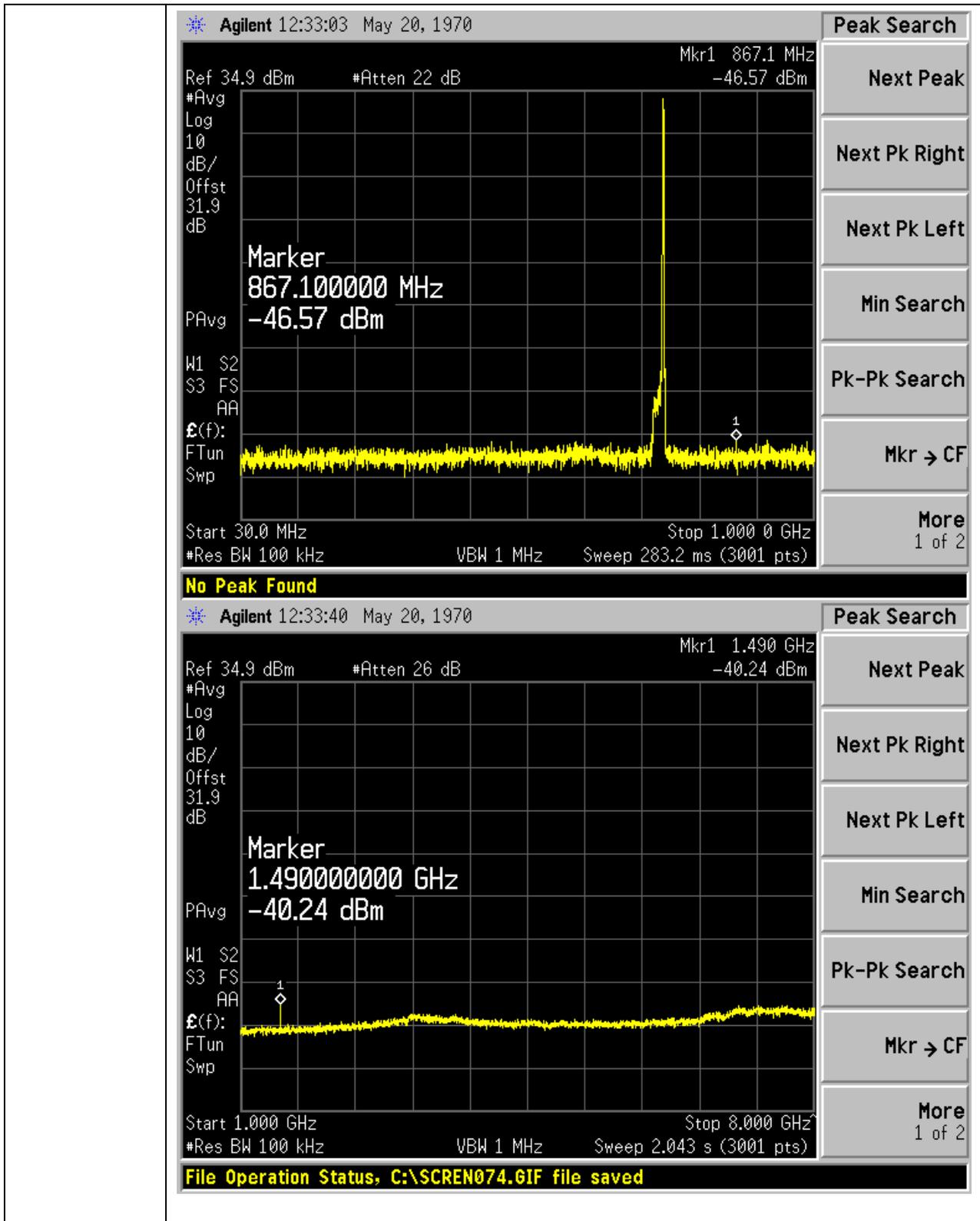
No.5015
729.5MHz





No.5090
737MHz

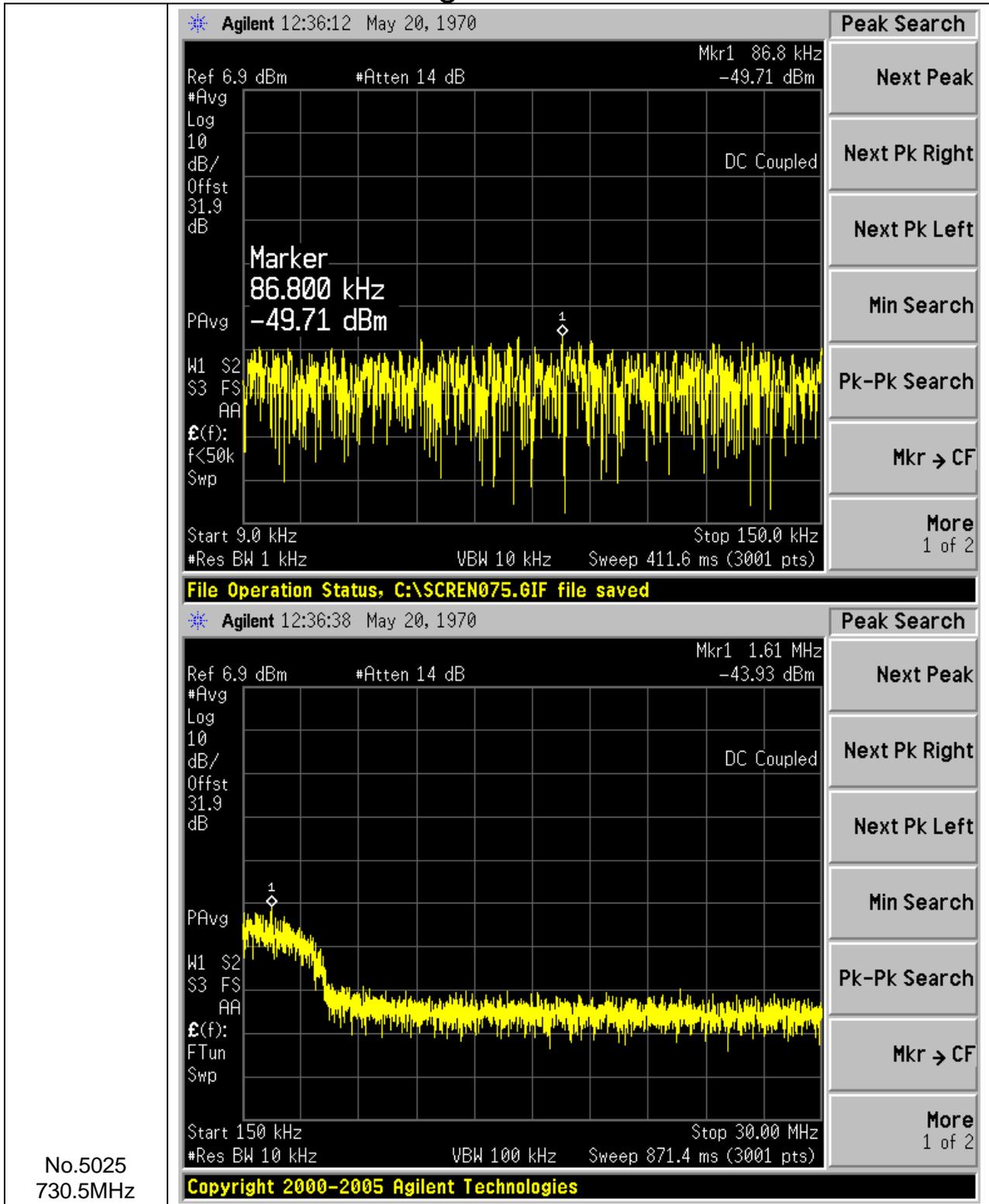


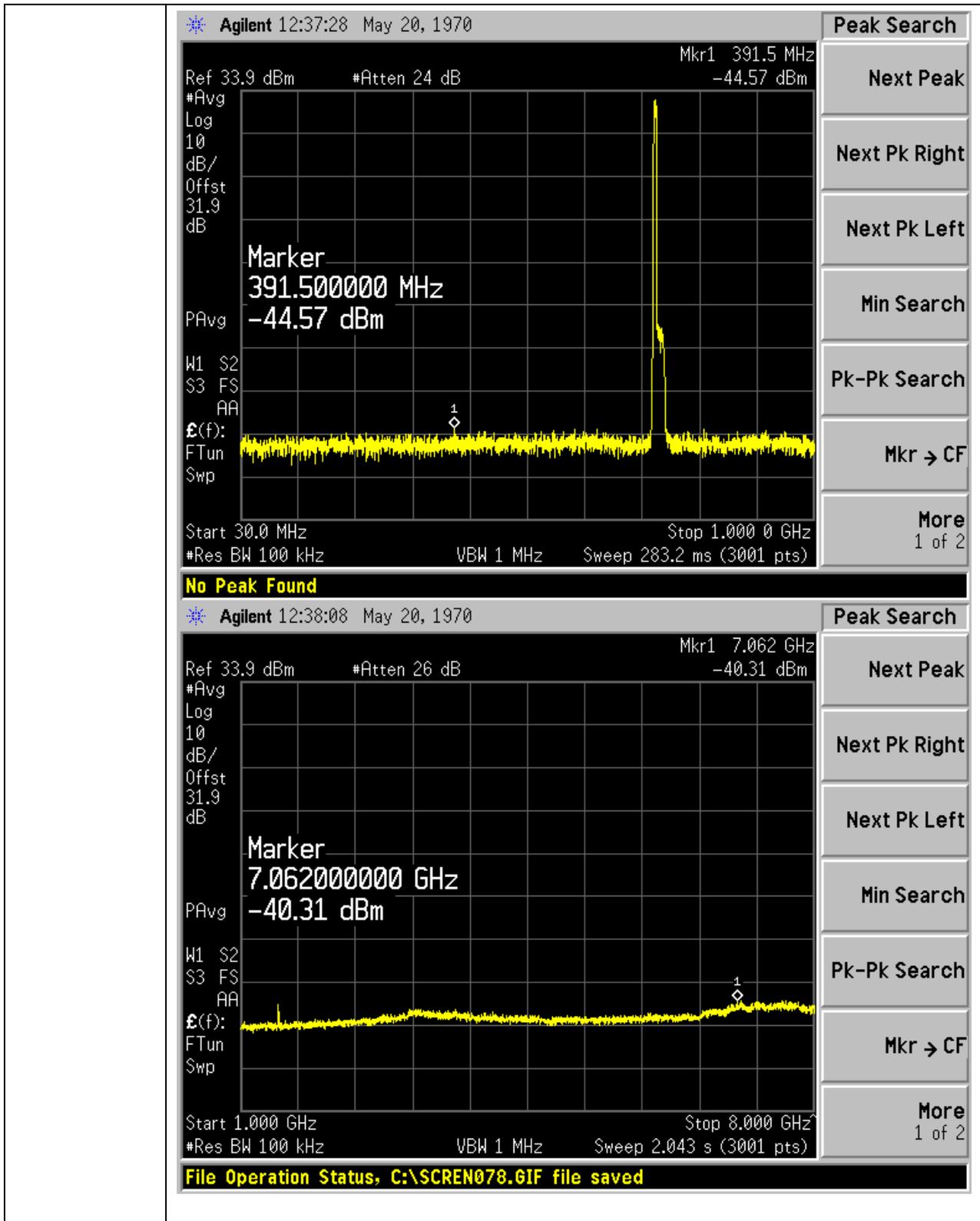


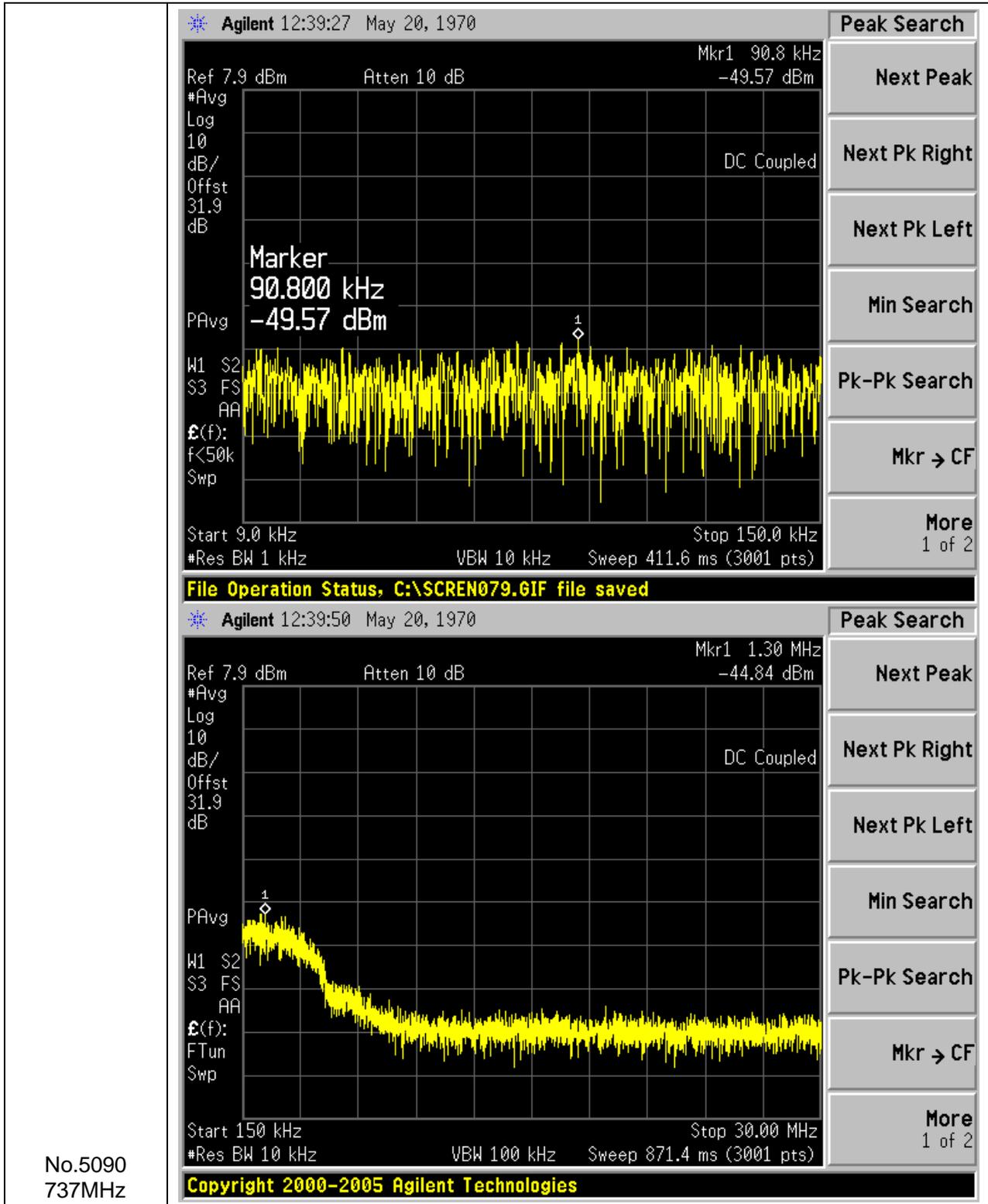


BW: 5M
 TM1.1:

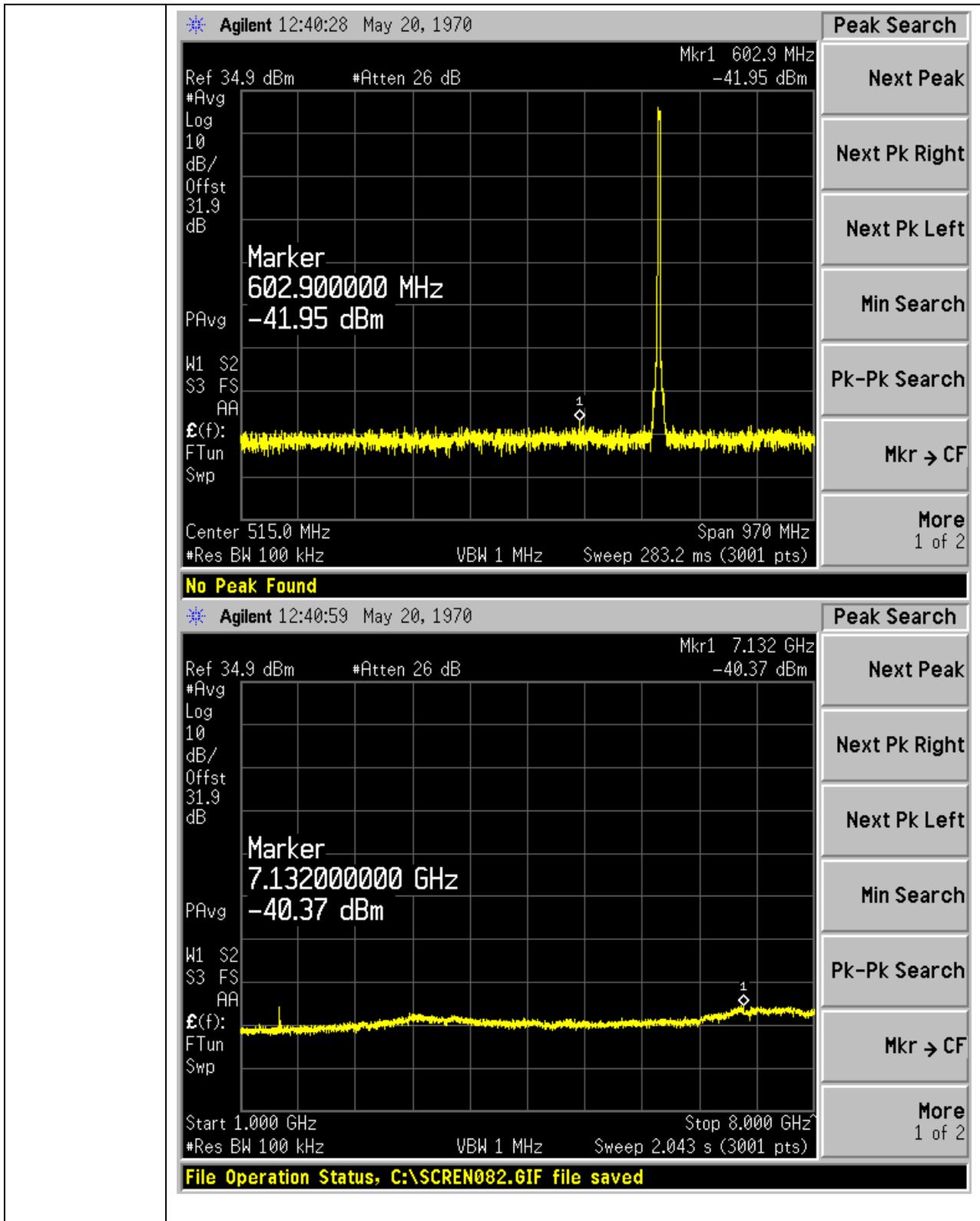
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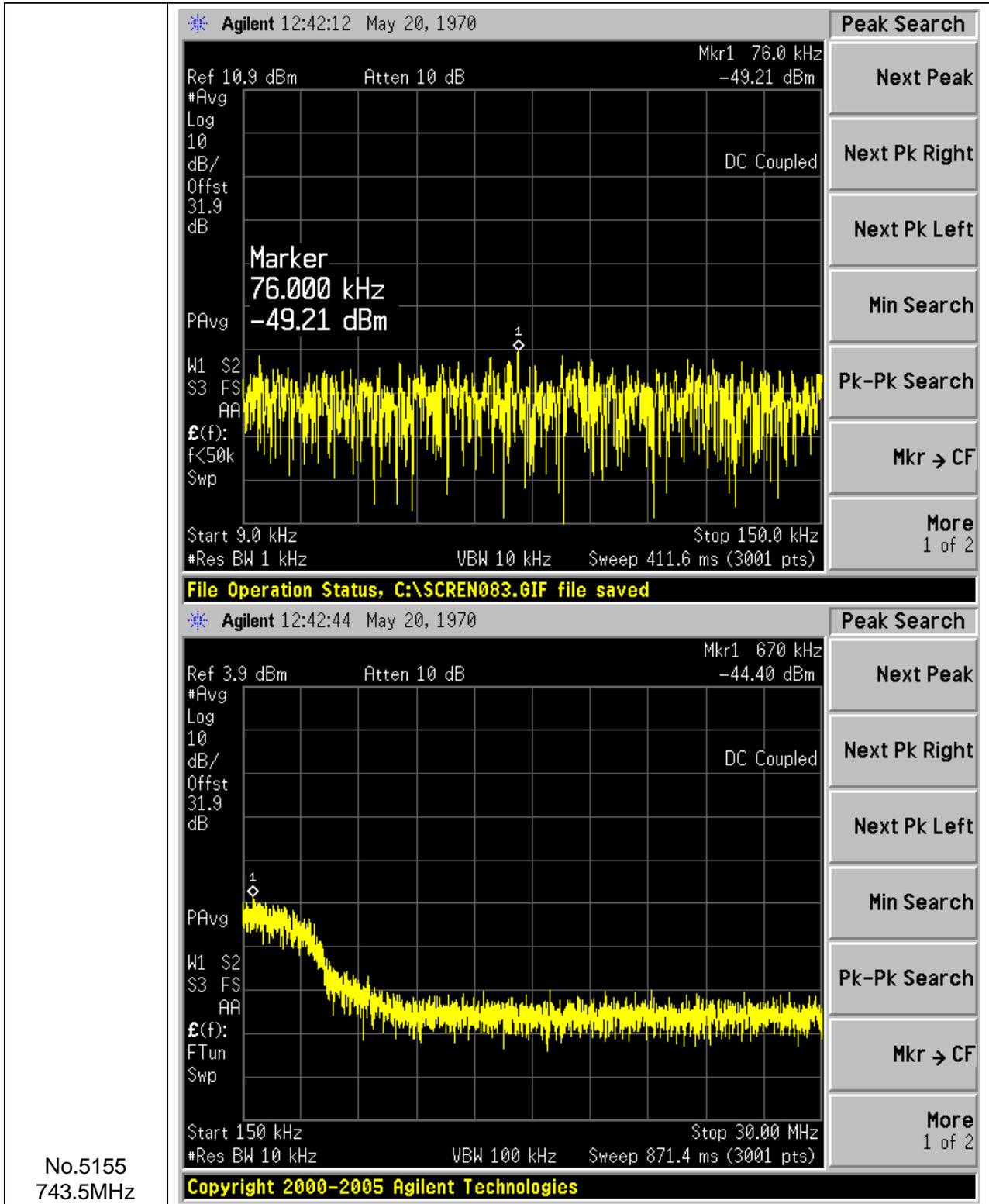




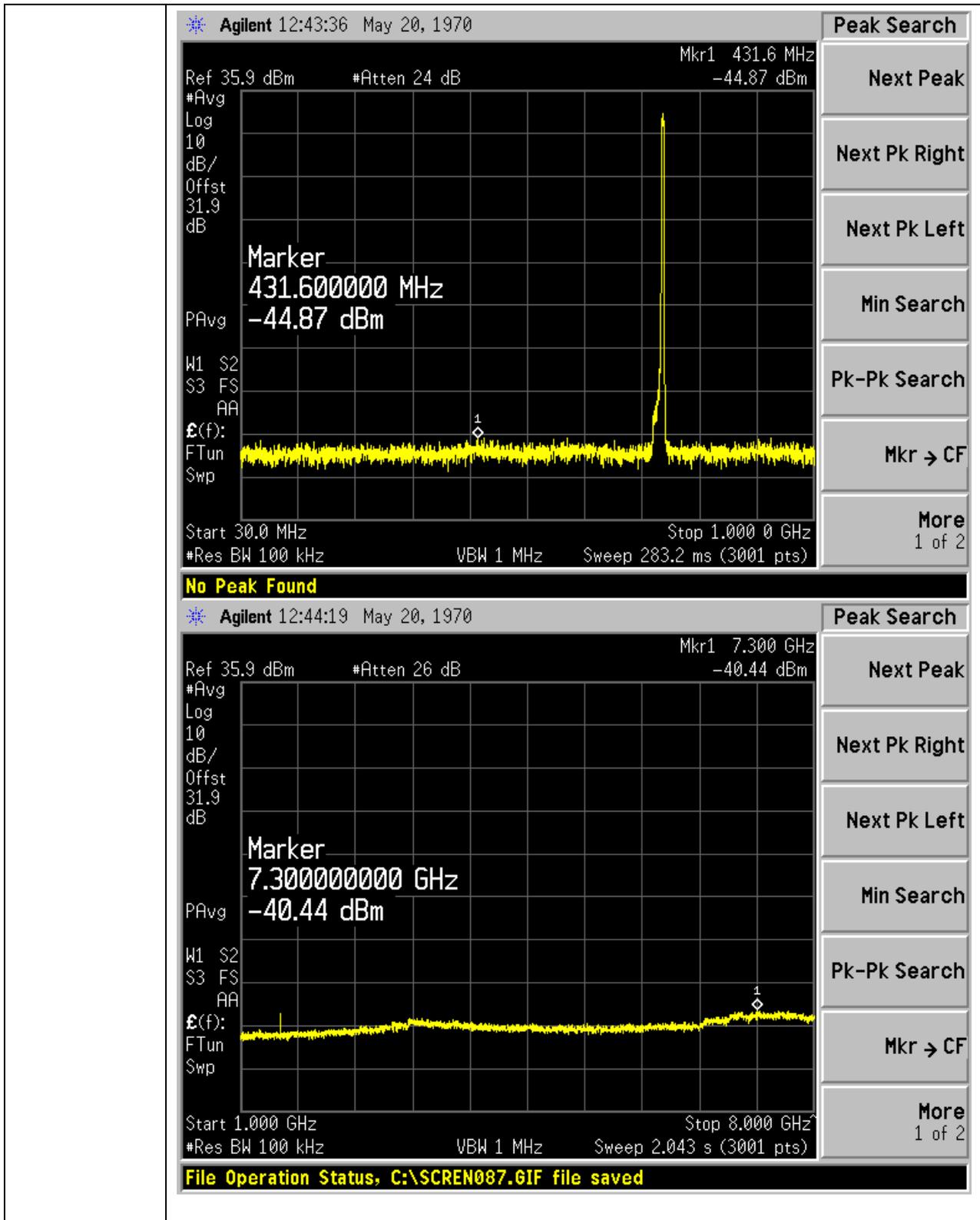


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737MHz





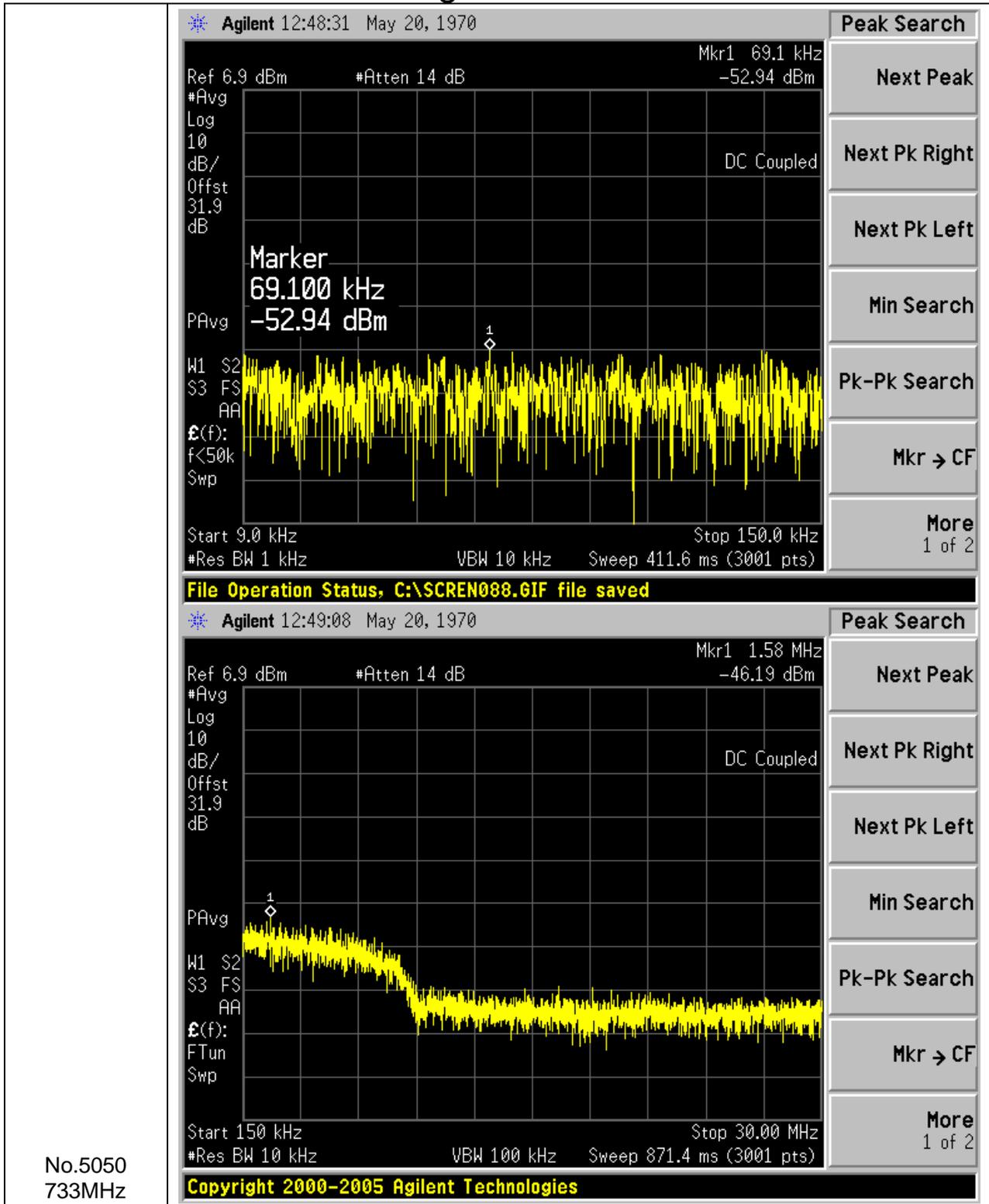
No.5155
743.5MHz



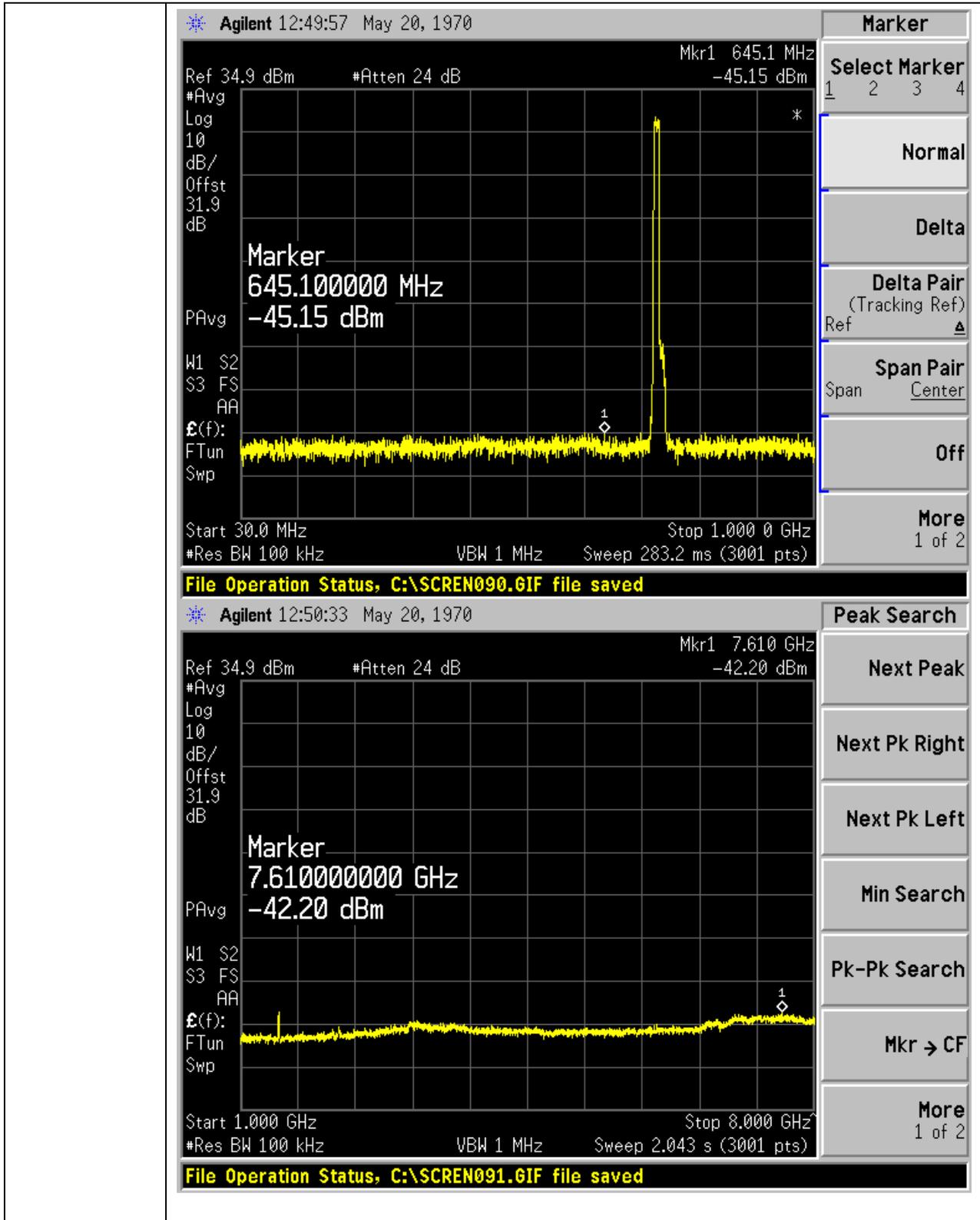


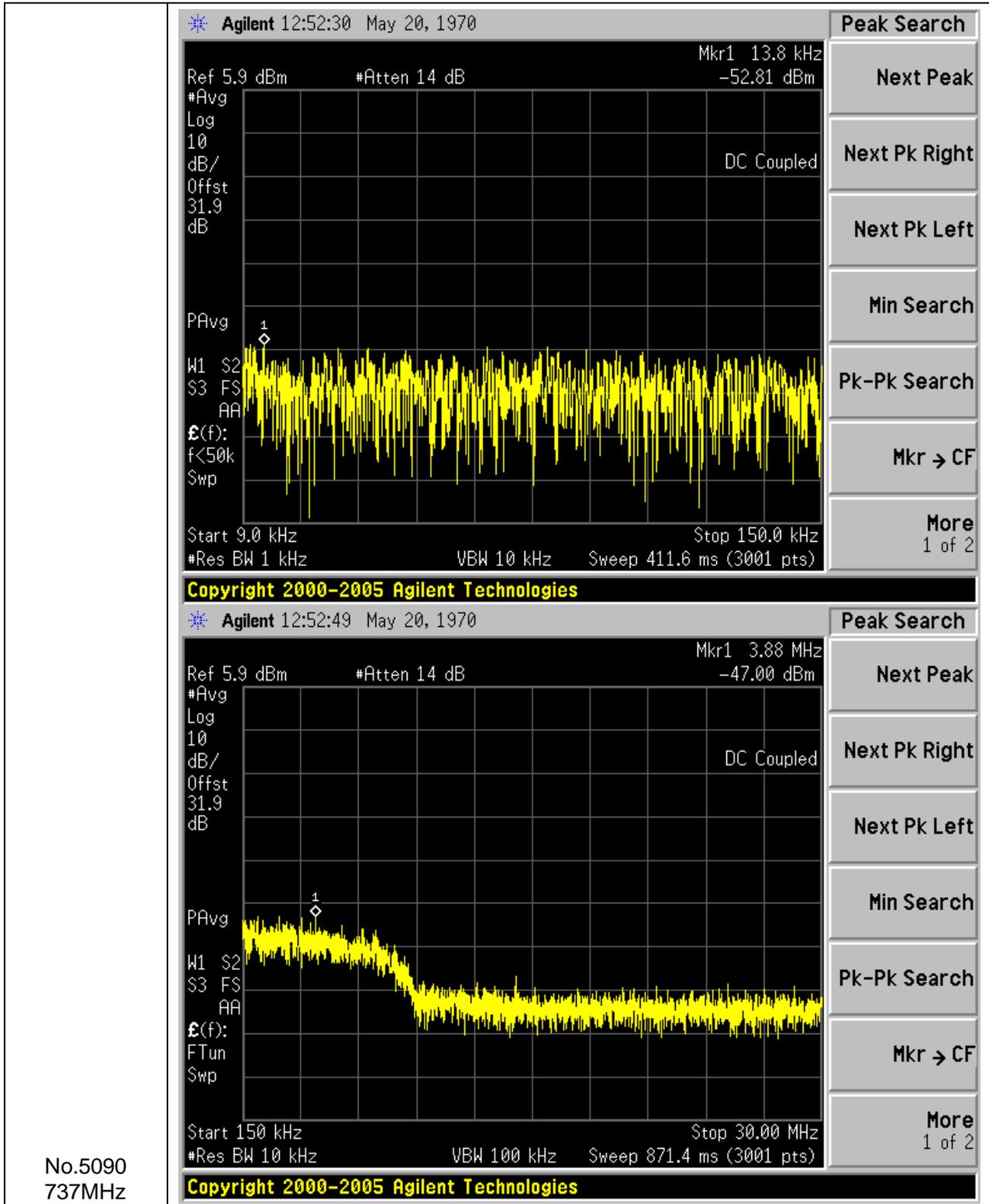
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TM1.1:

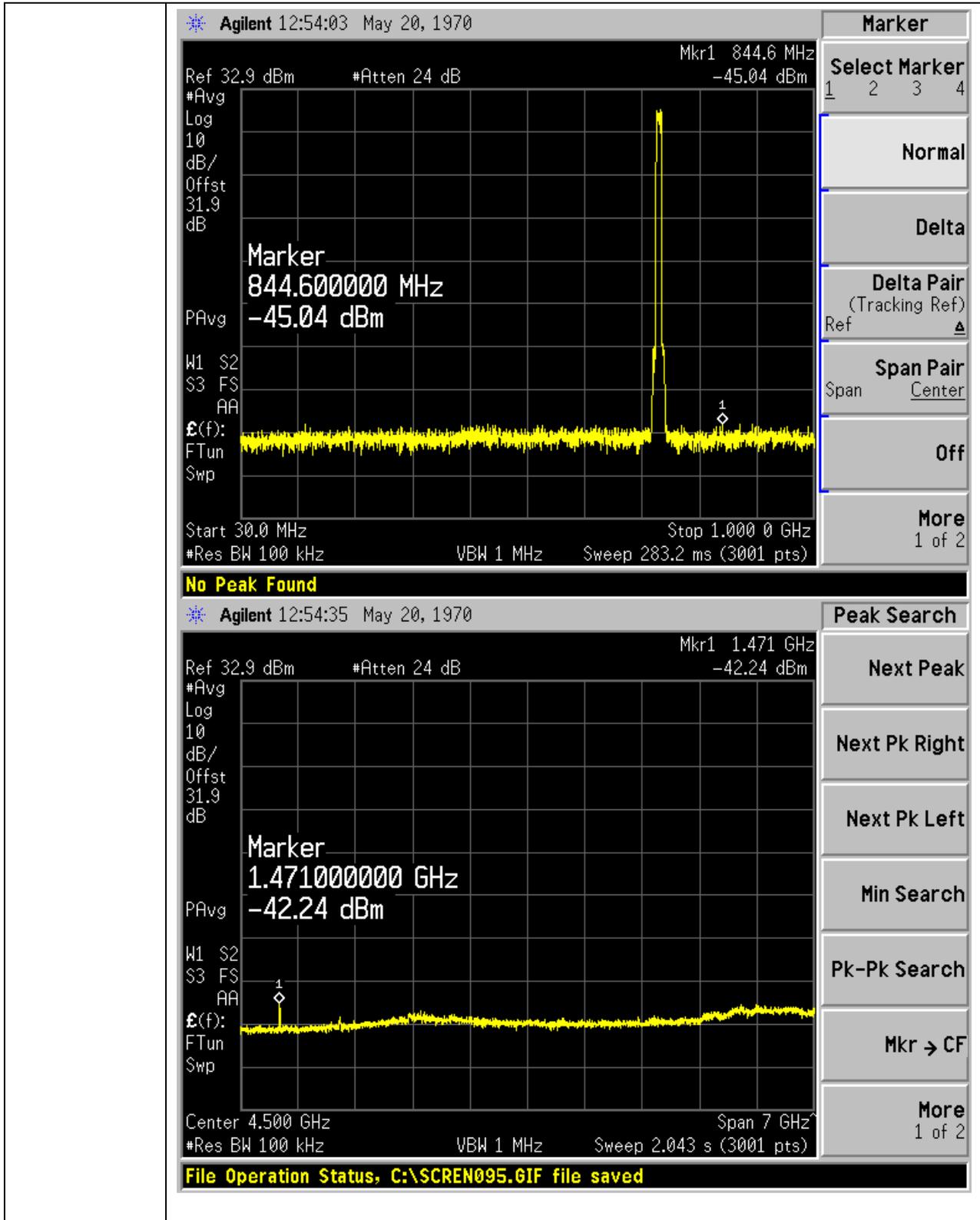
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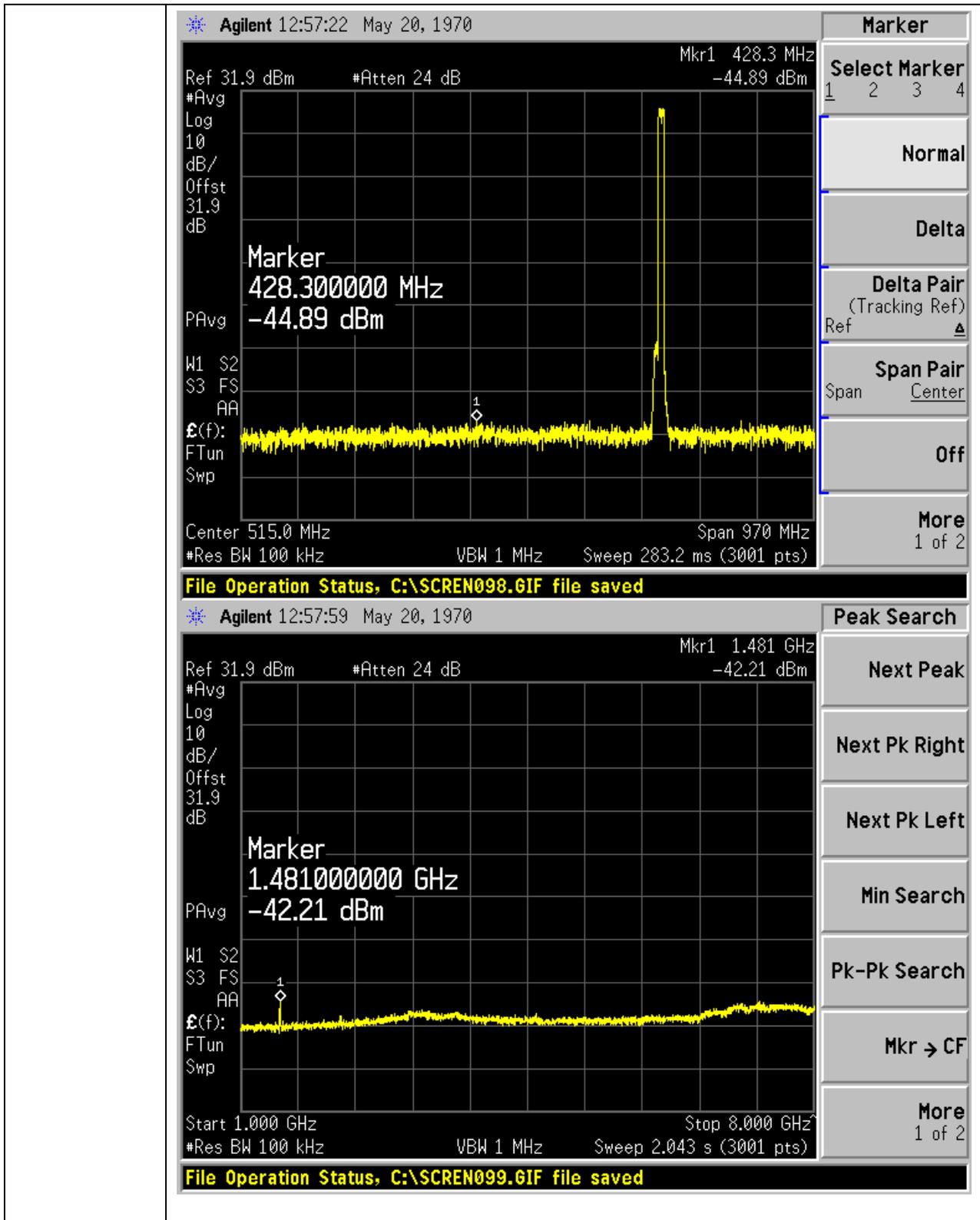


No.5050
733MHz





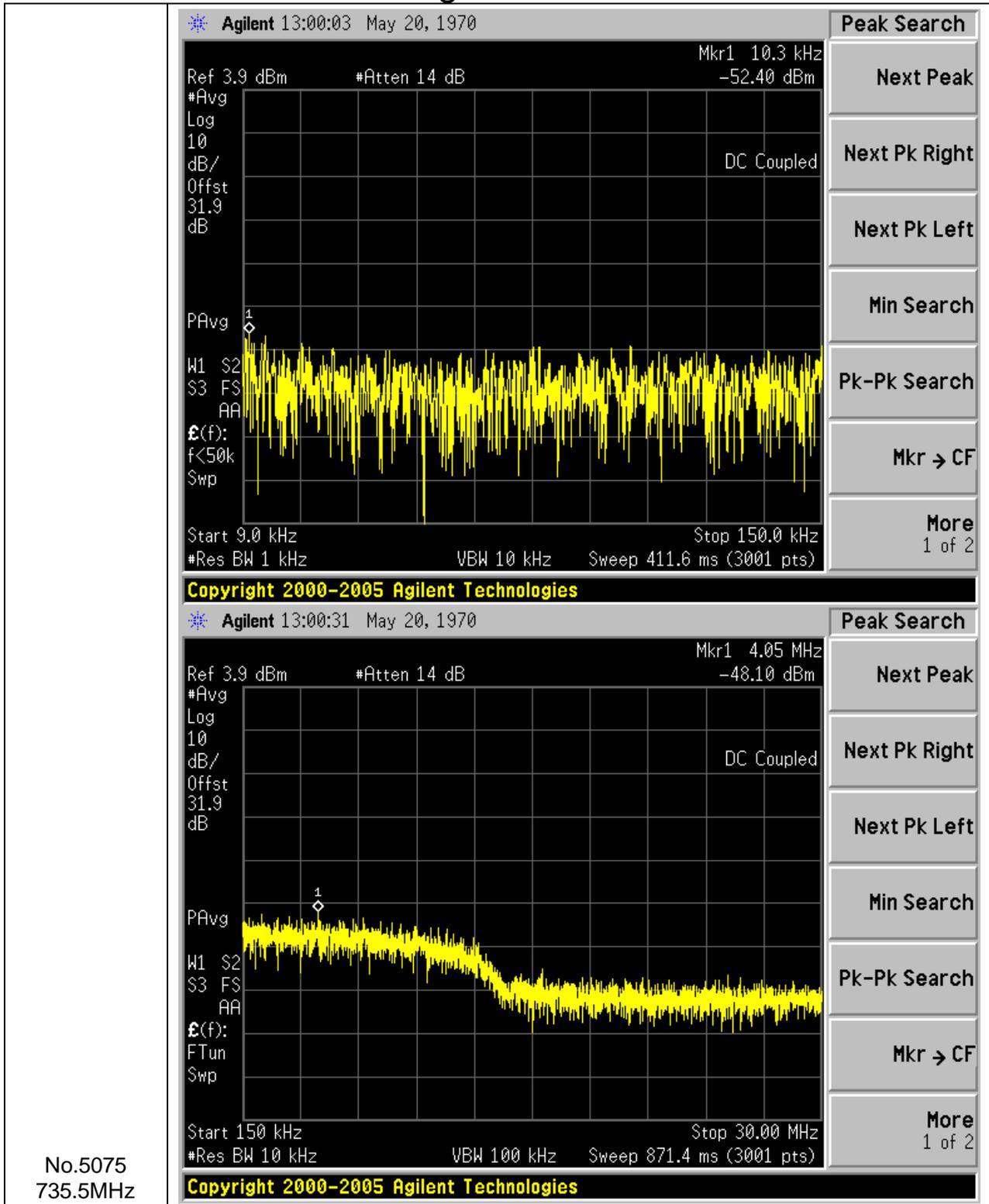




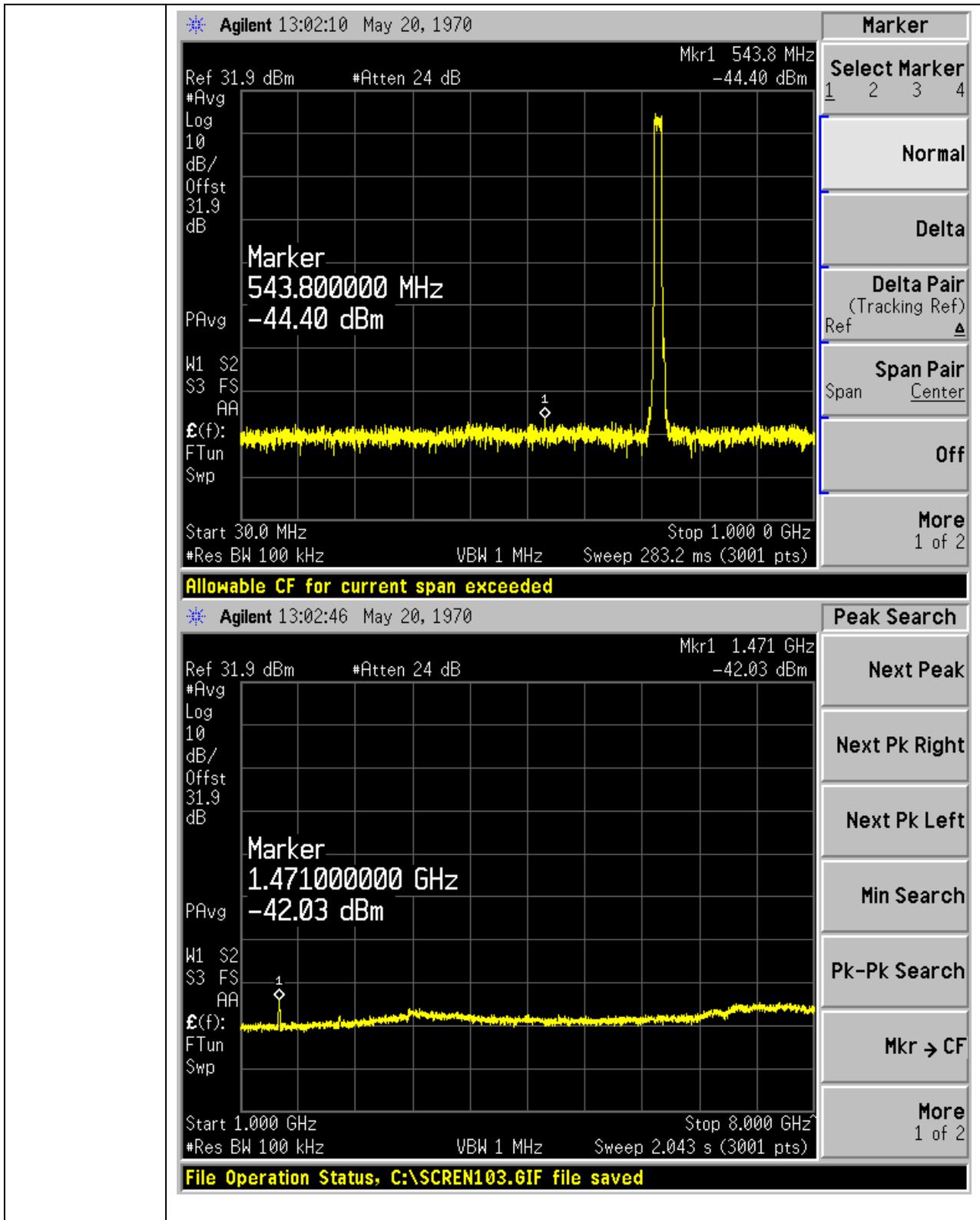


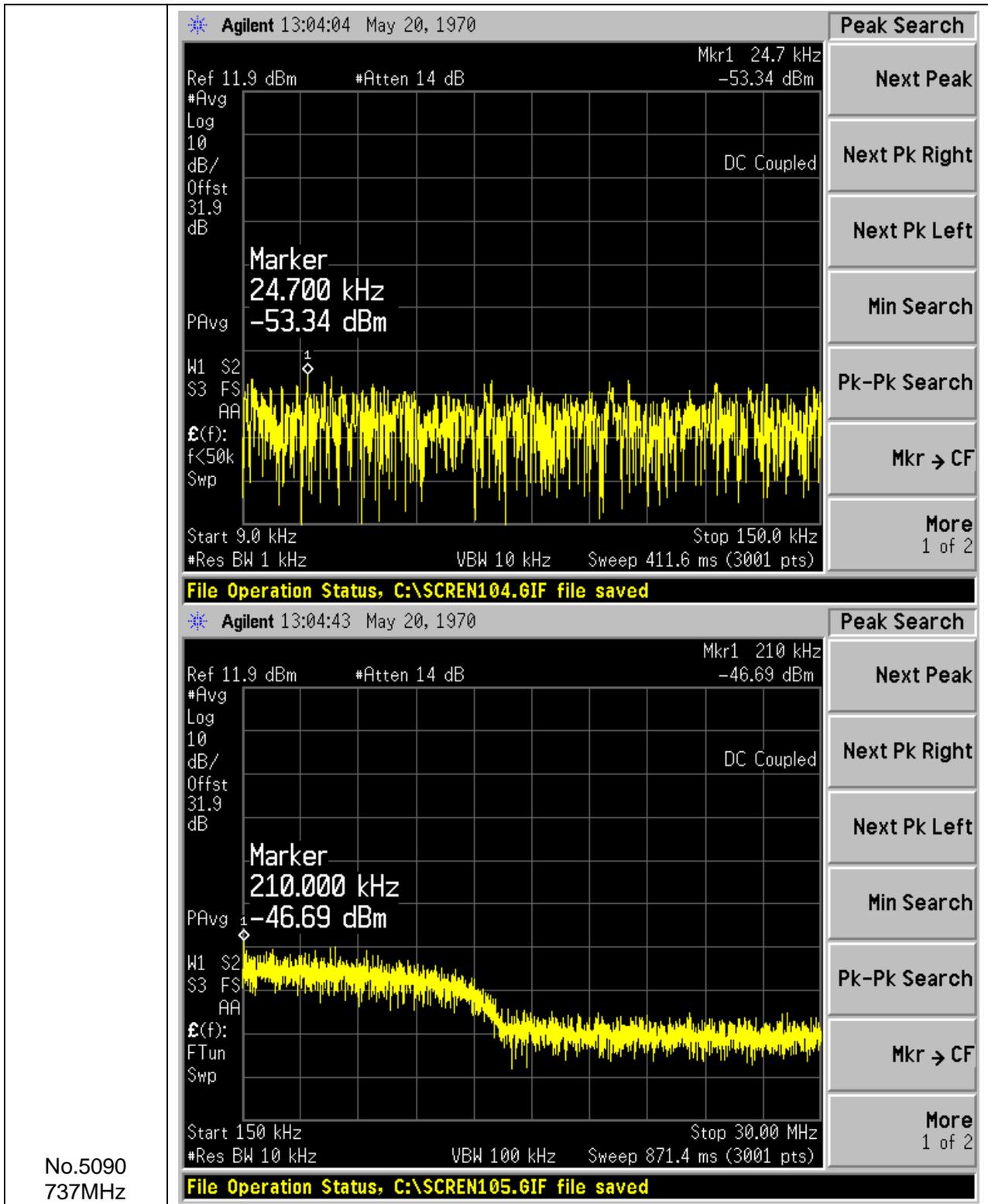
BW: 15M
TM1.1:

Single Carrier

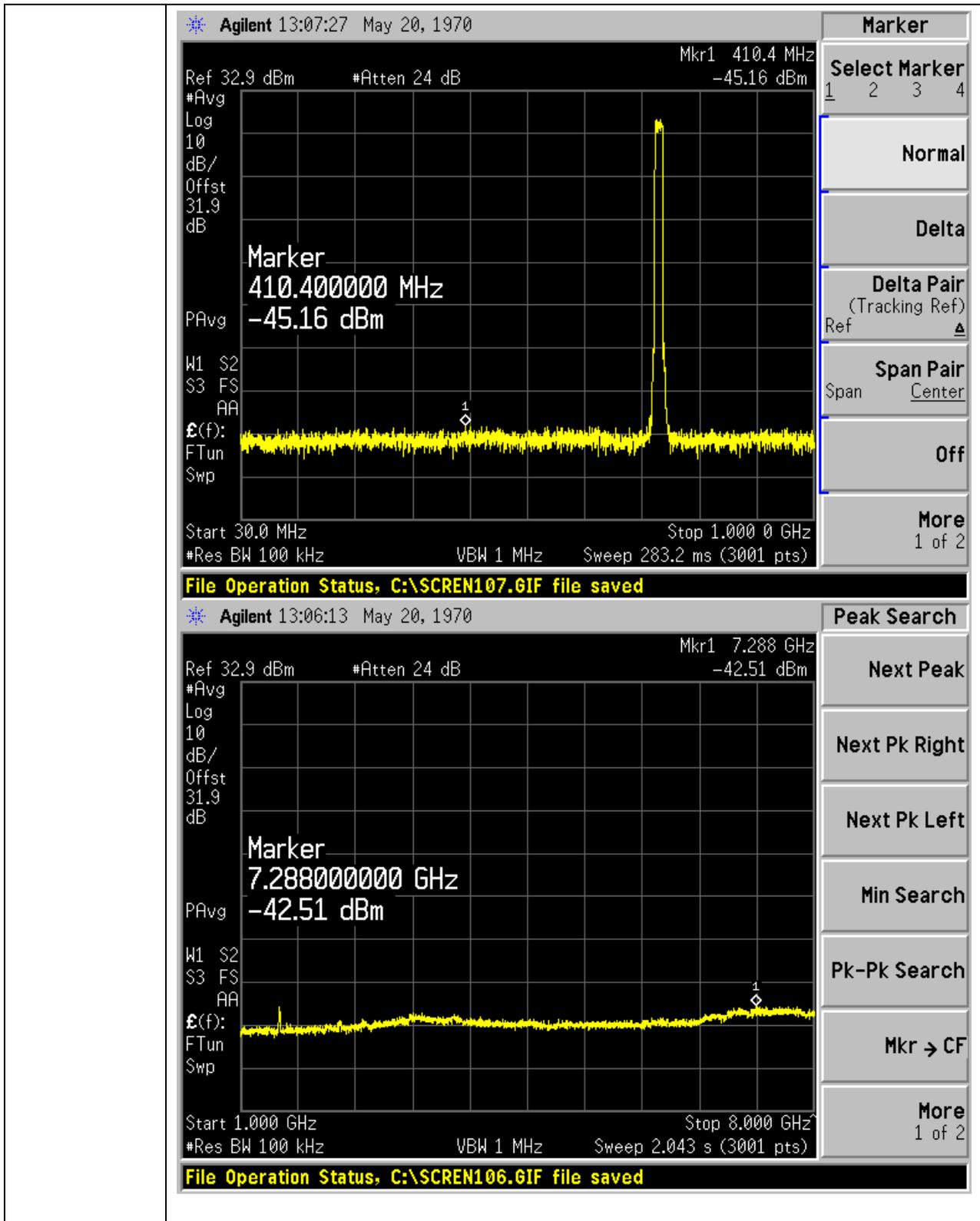


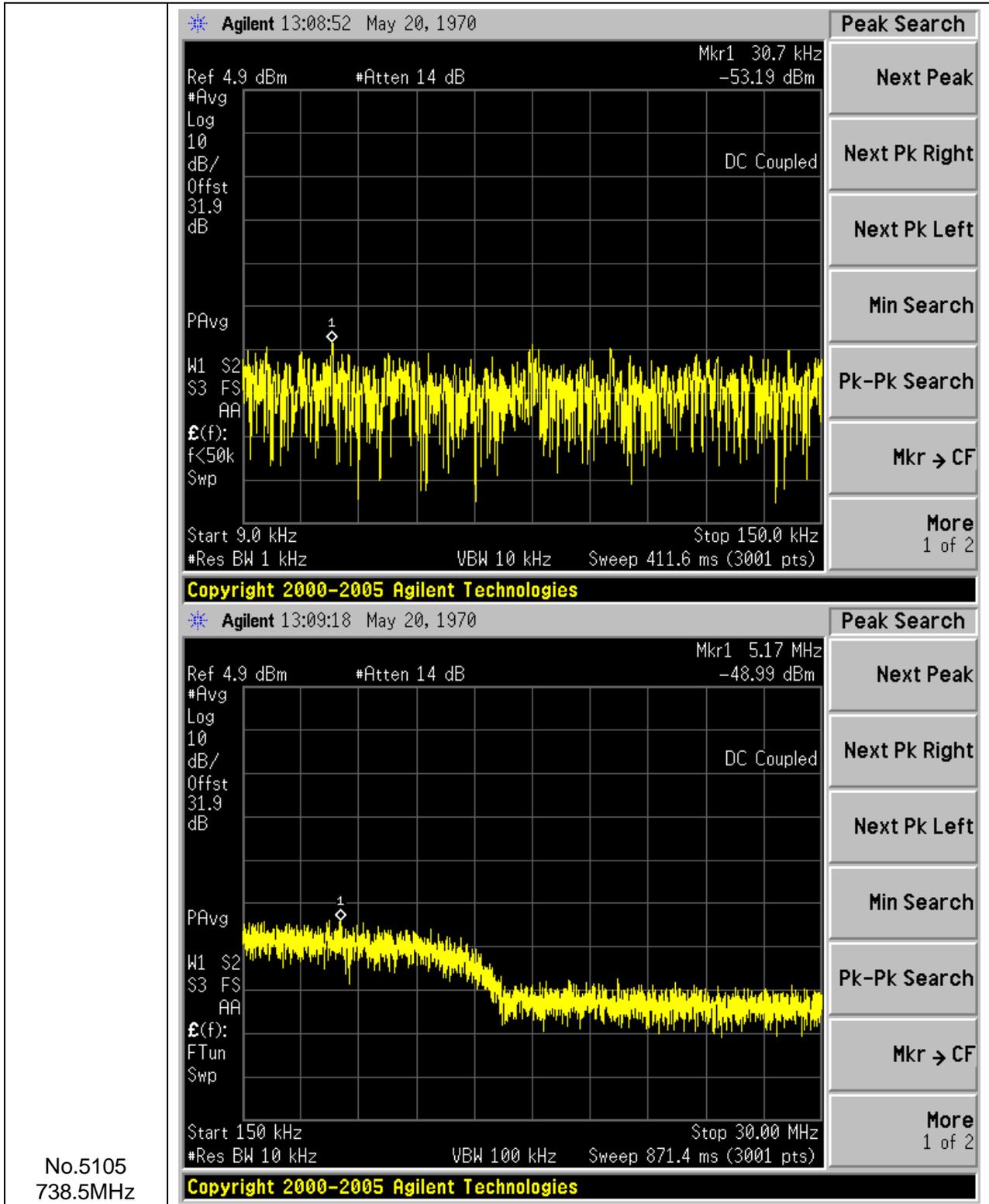
No.5075
735.5MHz



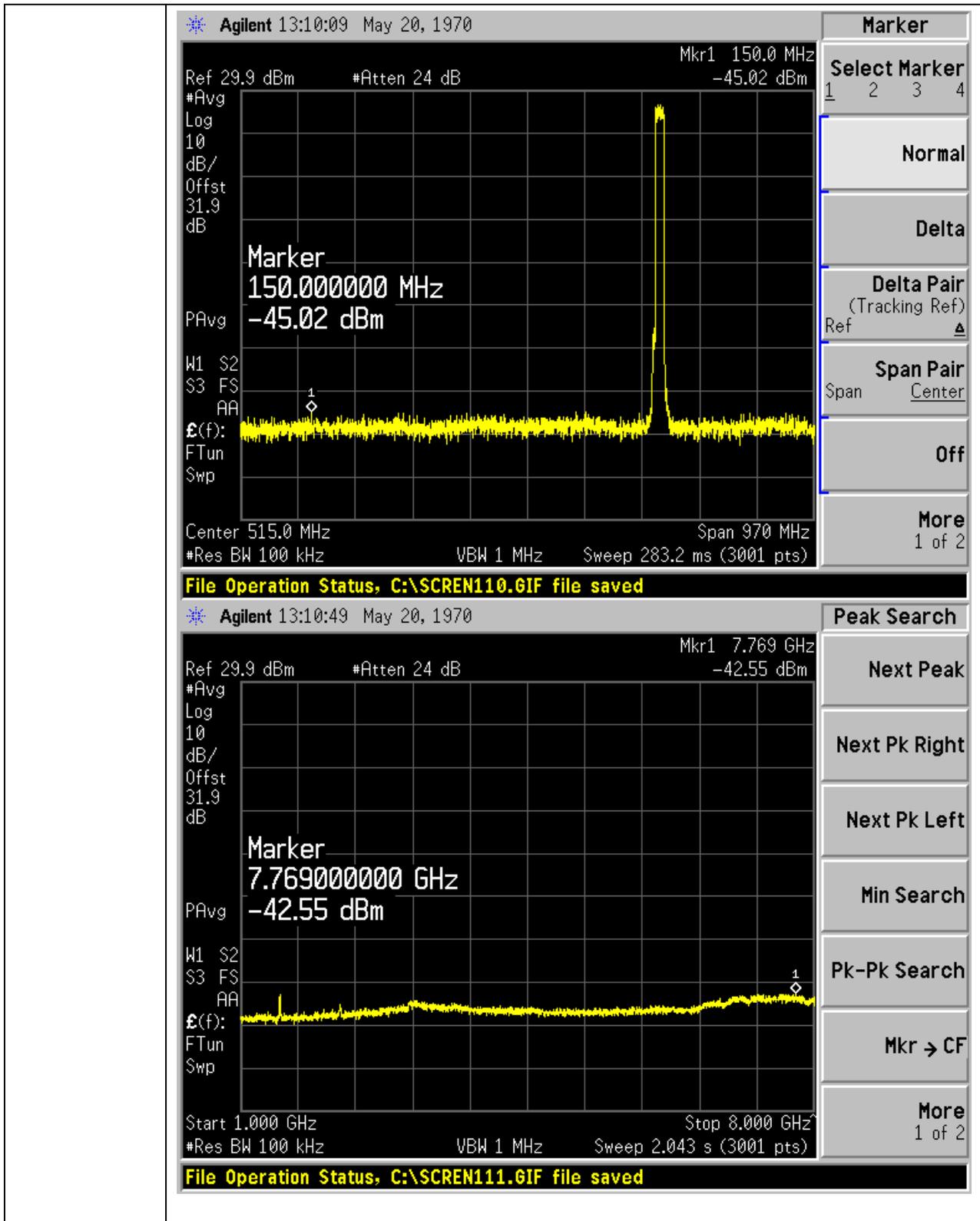


No.5090
737MHz





No.5105
738.5MHz





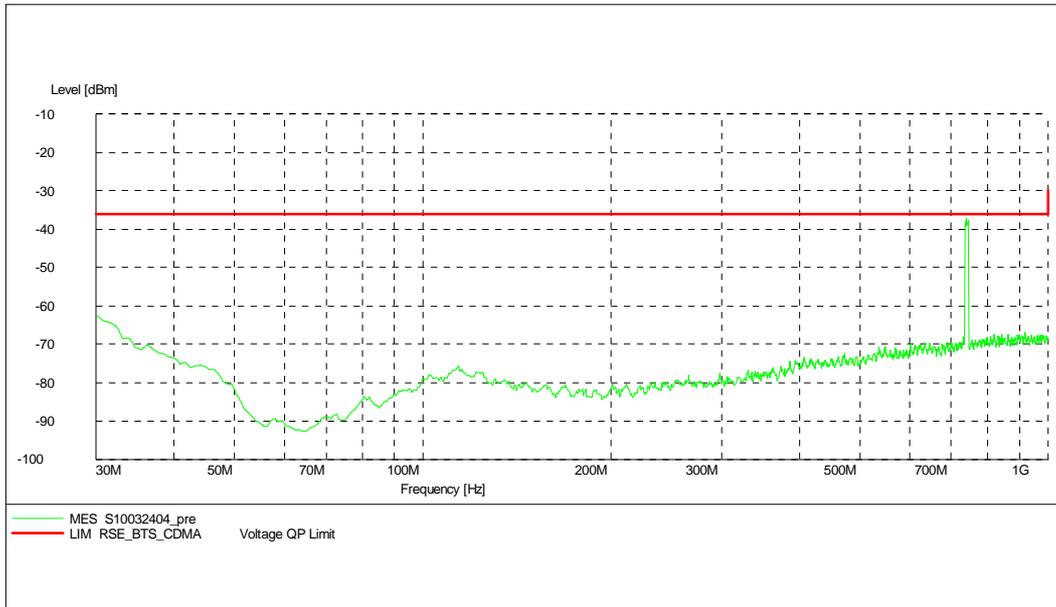
Appendix E

Field Strength of Spurious Radiation Measurement

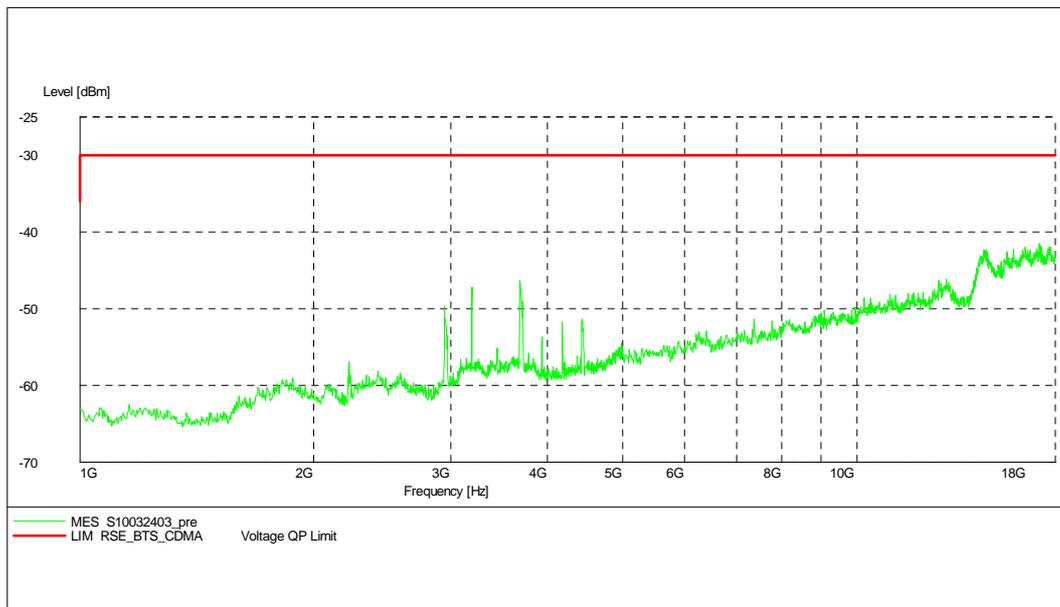
According to FCC part 2.1053 and part 27.53(g)

Note: a more stringent limit line than FCC required is used in this test.

Below 1G



Above 1G





Appendix F

Photos of Test Setup

1.Photos for Radiated Spurious Emissions:

1) Radiated Spurious Disturbance(below 1GHz)



2) Radiated Spurious Disturbance(above 1GHz)



----- END OF APPENDIXES -----